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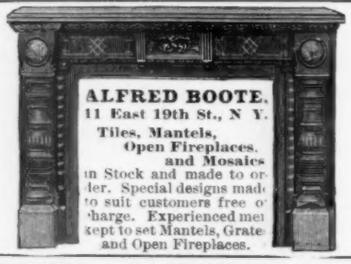

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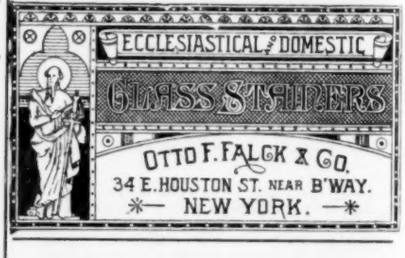

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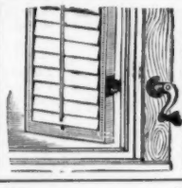

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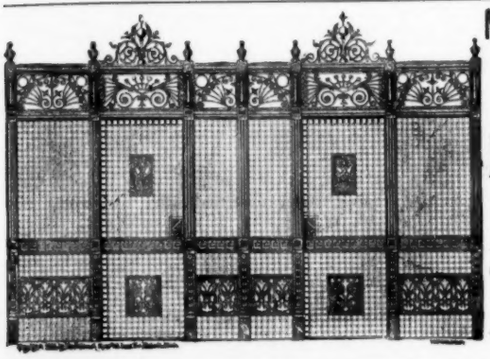

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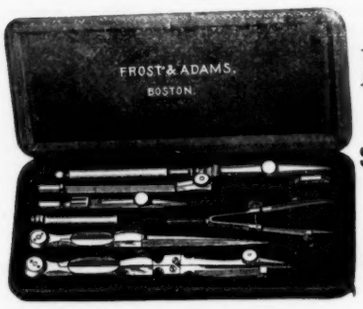

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We beg to announce that we have changed our Importer and have appointed **MARCIAL & CO., 36 Broadway, N. Y.** our sole agents for the Atlantic Seaboard of the U. S., and we ask all buyers of our Cements to address all inquiries to them.
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Quality and packages the best. Works the largest in the world. Price the lowest for the quality.

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BLACK, BROWN, BUFF, RED.
Brightest and Most Durable Colors Manufactured.
Send for Circular.
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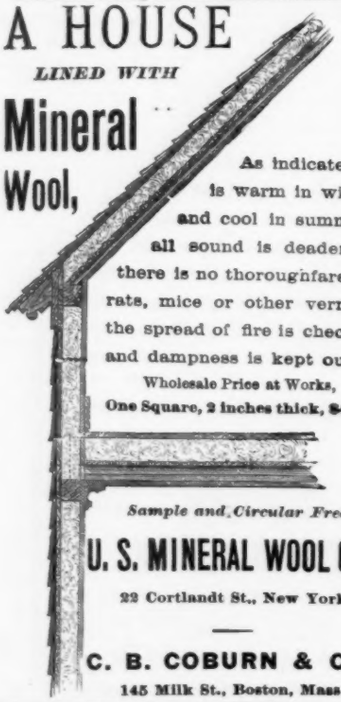
LINED WITH
Mineral Wool,



As indicated, is warm in winter and cool in summer; all sound is deadened; there is no thoroughfare for rats, mice or other vermin; the spread of fire is checked and dampness is kept out.
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One Square, 2 inches thick, $4.00.
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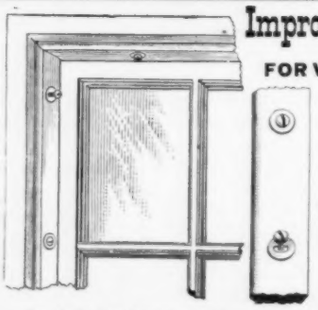
PATENT APPLIED FOR.
FOR WINDOW STOP BEADS & OTHER PURPOSES.
EASILY APPLIED! CHEAP! DURABLE!



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One half turn of the Screws render Stop Beads Adjustable to the Sash.
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Patented Oct. 29th 1884
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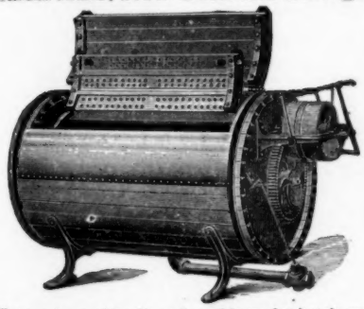

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ESPECIALLY ADAPTED TO
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IT IS POSITIVELY FIRE-PROOF.

WIRE LATHING possesses the following qualities:

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PLASTERING ON THE WIRE LATH WILL NOT CRACK.
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The plastering, when applied, **clinches** on both sides of the wire, **forming a double surface.**
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BRICK.—₱ M.	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago.	Philadelphia
Common: *Cargo afloat.*				
Pale	$3 00 @ $3 50	Eastern 7 00 @ 7 50	Building Brick 6 00 @ 7 00	Hard @ 8 00
Jersey	4 50 @ 5 50	Bay State Hard 9 00		Salmon @ 6 00
Long Island	@	Domestic Com. 8 00 @ 9 00	Indiana Pressd 16 00 @ 28 00	Stretchers @ 11 00
Up River	5 00 @ 5 50	Domestic Face 19 00 @ 20 00	St. Louis Fronts @ 27 00	Pressed 20 00 @ 23 00
Haverstraw Bay	5 75 @ 6 00	Philadelphia 40 00 @ 45 00	———	End Headers, all colors @ 65 00
" 1st	6 00 @ 6 50	Phila. mould 50 00 @ 80 00	———	Edge & End all colors @ 85 00
Hollow	@ 13 00		22 00 @ 29 00	———
Fronts:			65 00 @ 350 00	———
Croton, Brown	12 00 @ 13 00		@ 50 00	———
" dark	12 00 @ 14 00		———	———
" red	12 00 @ 14 00		@ 45 00	———
Chicago pressed			38 00 @	———
Chicago Moulded		Glens Falls 25 00 @ 26 00	25 00 @	———
Baltimore	37 00 @ 41 00		60 00 @ 100 00	———
Glens Falls—white	30 00 @ 35 00	Glens Falls Mould. 30 00 @ 35 00	30 @	———
Philadelphia	24 00 @ 25 00		35 @	———
Trenton	24 00 @ 25 00		55 00 @ 65 00	
Milwaukee				
Moulded:				
Clark's Glens Falls—Red	25 00 @ 27 00		@ 100 00	Dom. @ 65
" —White	30 00 @ 35 00		@ 120 00	@ 85
White " Mold,	45 00 @ 60 00			
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	*Not Sold.*	1 50 @ 1 75
Enamelled (edge and end)	90 00 @ 115 00	@		
CEMENT, LIME, etc.—(₱ *cask.*)				
Rosendale Cement	90 @ 1 00	@ 1 40	*Not sold.*	*Not sold.*
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	@ 3 50
Portland, English (Gibbs)	2 50 @ 3 10	@ 3 00	3 00 @ 3 25	@ 3 25
" " (K. B. & S.)	2 75 @ 3 10		3 25 @ 3 50	@ 3 00
" " (Burham)	2 50 @ 2 80		3 15 @ 3 35	
" " (White's)	2 65 @ 3 00			
" German (Alsen)	2 50 @ 3 00	3 00 @ 3 50	3 15 @ 3 35	@ 25
" " (Fewer)	2 45 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" " (Vorwohler)	2 50 @ 3 25		3 00 @ 3 25	
" " (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 50	3 00 @ 3 2
" " (Lagerdofer)	@ 2 70	*Not sold.*	*Not sold.*	*Not sold.*
" " (Hanover)	2 50 @ 3 00		3 15 @ 3 35	2 50 @ 3 00
" French (Lafarge)	3 50 @ 4 50	*Not sold.*	3 75 @ 4 25	4 50 @
" American (Saylor's)	2 15 @ 2 30	2 15 @ 2 50	2 75 @ 3 00	2 50 @ 3 00
Selenitic		1 65	*Not sold.*	
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	3 50 @ 3 75
Keene's coarse	5 00 @ 6 50	@ 7 50	8 00 @ 9 00	6 50 @ 7 00
" superfine	8 75 @ 11 00	@ 11 50	12 00 @ 13 00	11 50 @ 12 00
Lime:				
Lime of Teil	@ 5 00		*Not sold.*	
Hydraulic Lime	@ 1 45	@ 145		
Chicago Lime in bulk			65 @ 75	White Mash
Wisconsin "			75 @ 85	1 25 @ 150
Rockland and Rockport, (Com.)	@ 1 00	@ 1 15	*Not sold.*	1 00 @ 1 00
Rockland and Rockport, finish	@ 1 20	@ 1 20	*Not sold.*	
State, com. cargo rates (nom.)	@ 90	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 10	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	@ 1 25	1 65 @ 1 90	@ 1 75	2 00 @ 2 25
" (casting)	@ 1 35	@ 2 25	@ 1 75	2 25 @ 2 50
Hair (Cattle) ₱ *bush*	21 @ 25	@ 30	20 @ 25	20 @ 25
" (Goat)	30 @ 35	@ 30	35 @ 40	28 @ 33
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	@ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60	*Not sold.*	75 @ 2 00
Limestone:				
Bedford	@ 1 00	95 @ 1 00	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine			80 @ 90	75 @ 2

(Continued on page v.)

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BUILDING MATERIALS.

	New York.	Boston.	Chicago.	Philadelphia
Foundation:	*(Wholesale Prices.)*	*(Prices to Builders and Contractors.)*		
Dimension	@	5 00 ℔ ton	20 @ 28	30 @ 5 00
Block	@	4 60 ℔ perch	8 50 ℔ cord.	50 @ 6 00
Rubble	@	1 25 @ 1 50	8 50 @	
Bluestone: (℔ *sq. ft.*)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone.				
Longmeadow		75 @ 85		
Kibbe		85 @ 95		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub.ft.	1 35 @ 2 00
Amherst }	90 @ 95	90 @ 1 00	55 @ 65	
Berea } Ohio	75 @ 1 00	80 @ 90	45 @ 55	80 @ 1 10
Berlin }	75 @ 1 00	80 @ 90	55 @ 65	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick and Nova Scotia	@ 1 00	75 @ 1 00	"	
Caen	@	@ 2 00	"	
Marble (℔ *cu. ft.*)				
Lee, Mass	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 6 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 6 00	2 50 @ 4 00
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	—@—
" Sienna	@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 6 00	
Slate: Roofing (℔ *square*)	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	6 25 @ 7 00
" green	@ 5 75	@ 5 75		
" " unfading	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 7 00
" purple	13 00 @ 15 00	13 00 @ 14 00	—@ 16 00	@ 12 00
" red	—@—	Brownville, Me.	7 20 @ 7 60	@ 4 00
" black, Lehigh	—@—	6 50 @ 9 00	7 30 @ 8 00	@ 4 50
" " Chapmans	5 50 @ 8 00	5 50 @ 8 00	6 00 @ 8 50	5 50 @ 8 00
" Unfading Black, Monson, Me.	@		*Not sold.*	@ 15 00
Tiles, Am. ℔ M.				@ 3 85
N. Peach Bottom, warranted unfading				
LUMBER.—℔ M.				
Boards: (*Ordinary dimensions.*)				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 60 00	44 00 @ 46 00	65 00 @ 75 00
" 2d quality	55 00 @ 60 00	42 00 @ 48 00	40 00 @ 44 00	55 00 @ 60 50
" 3d quality	18 00 @ 22 00	35 00 @ 40 00	37 00 @ 42 00	18 00 @ 22 00
Spruce	@ 25 00	11 00 @ 14 00	*Not sold.*	@ 22 50
Hemlock	ea. 17 @ 18	11 00 @ 12 50	@ 10 00	12 50 @ 15 00
Yellow pine	20 @ 40	30 00 @ 38 00	@ 28 00	17 00 @ 20 00
Cypress	@	32 00 @ 40 00	@	40 00 @ 55 00
Clapboards:				
Pine	@	33 00 @ 55 00	9 00 @ 20 50	—@—
Spruce	@	23 00 @ 35 00	*Not sold.*	—@—
Framing Timber:				
Pine			11 00 @ 16 00	25 00 @ 35 00
Spruce	13 50 @ 16 00	13 50 @ 15 00	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	10 50 @ 15 50	12 00 @ 13 00
Yellow pine	18 00 @ 25 00	23 00 @ 26 00		25 00 @ 30 00
Laths:				
Pine	@	2 25 @ 2 35	1 75 @	—@—
Spruce	2 20 @ 2 25	2 00 @ 2 25	*Not sold.*	2 35 @ 2 40
Shingles:				
Pine, shaved ℔ M.	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed "	4 00 @ 5 00	@ 4 50	2 25 @ 2 45	
Spruce, sawed "	1 50 @ 2 00	@ 1 50	*Not sold.*	
Redwood ℔ 125	1 40 @ 1 60	3 75 @ 4 50	5 50 @ 8 00	30" $10 @ 28
Cedar, split ℔ M.	@	@	*Not sold.*	24" 8 @ 21
Cedar, sawed "	@	2 00 @ 4 00	2 00 @ 2 25	20" 5 50 @ 14
Cypress. Split...7 x 24. "	18 00 @ 20 00	5 50 @ 6 00	4 00 @ 4 50	13 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	4½ @ 5½	Piles 6c. ℔ ft.	*Not sold*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 11	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	70 @ 1 25
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ℔ M. (*First Qual.*				
Ash [*Kiln-dried.*]	@ 55 00	38 00 @ 48 00	35 00 @ 40 00	45 00 @ 50 00
Cherry	80 00 @ 120 00	60 00 @ 90 00	80 00 @ 100 00	65 00 @ 90 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	50 00 @ 60 00	70 00 @ 85 00
Mahogany, Baywood [Mexican]	@ 180 00	150 00 @ 160 00	150 00 @ 180 00	120 00 @ 150
" St. Domingo	@ 350 00	120 00 @ 350 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 65 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	@ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	45 00 @ 50 00	70 00 @ 80 00
Sycamore quartered		50 00 @ 65 00	40 00 @ 50 00	70
Pine, clear	65 00 @ 70 00	30 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	60 00 @ 70 00	60 00 @ 70 00	56 00 @ 65 00	100 00 @
Rosewood ℔ ft.	@ 5		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 120 00	80 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	30 00 @ 35 00	20 00 @ 30 00
Yellow pine ℔ M.	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. (*In oil,* ℔ *lb.*)				
White lead, Am.	6½ @ 6¾	@ 6½	@ 6½	5 @ 6½
" Zinc, "	5 @ 8½	@ 8	7 @ 10	4 @ 6
Red lead, Am.,	6 @ 6¾	6 @ 6¾	@ 6½	
" Venetian	6 @ 10½	7 @ 12	1¾ @ 2¼	6 @ 8
" Vermilion	65 @ 70	55 @ 60 dry	55 @ 60	Am. 14 @ 22
Red Indian, Eng.	12 @ 20	12 @ 20	12 @ 20	12 @ 18
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	7 @ 9
" Chrome	12 @ 20	18 @ 25	15 @ 25	12 @ 25
Green (chrome)	8 @ 13	8 @ 20	10 @ 20	9 @ 15
Green, Paris,	25 @ 40	25 @ 40	18 @ 35	18 @ 22
Black, lamp,	15 @ 25	15 @ 25	8 @ 30	8 @ 12
Blue, ultramarine	12 @ 18	18 @ 30	12 @ 35	11 @ 35
Oil, linseed, (raw) (℔ gal.)	45 @ 48	48 @ 53	46 @ 48	52 @ 55
" " boiled (℔ gal.)	48 @ 51	51 @ 56	49 @ 51	57 @ 59
Turpentine (℔ gal.)	35 @ 37	40 @ 47	41 @ 43	@ 45
Varnish, coach (℔ gal.)	@	1 50 @ 6 00	1 25 @ 2 00	1 75 @ 2 25
Shellac (℔ gal.)	@	2 50 @ 3 00	3 25 @ 4 00	1 10 @ 1 75
Putty	2 @ 3	2 @ 4	02 @ 03	2 @ 2½
Whiting (℔ cwt.)	50 @ 65	1 @ 1½	1 @ 2	1 @ 1½
Paris white, (Eng.,) (℔ cwt.)	2 @ 3	2 @ 3	2 @ 2½	1½ @ 1½
Litharge, Am. (℔ cwt.)	5½ @ 5½	6½ @ 7	6½ @ 10	6½ @ 7½
Sienna (burnt) (℔ cwt.)	12 @ 17½	14 @ 20	4 @ 16	9 @ 14
Umber, " (℔ cwt.)	11 @ 16½	14 @ 20	@ 10	9 @ 14

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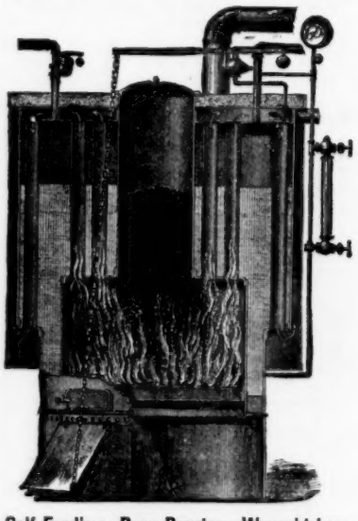
Steam Generator.



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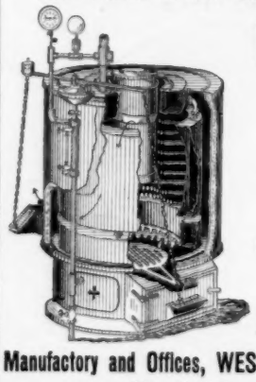
The Wilson Patent Base-Burning



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THE NEW
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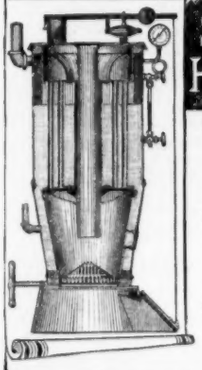
STEAM HEATER



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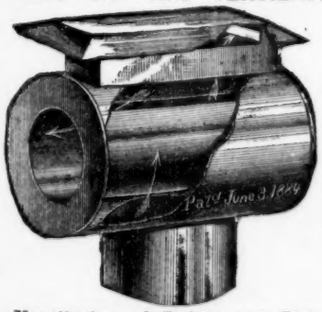

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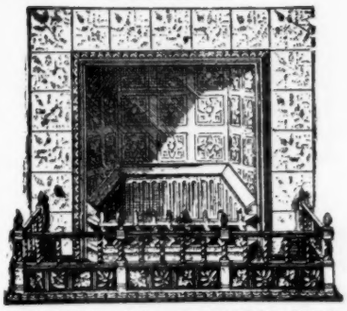

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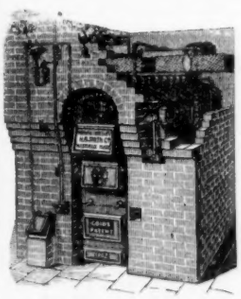

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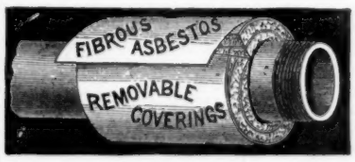

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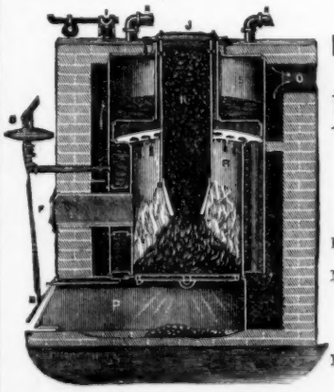

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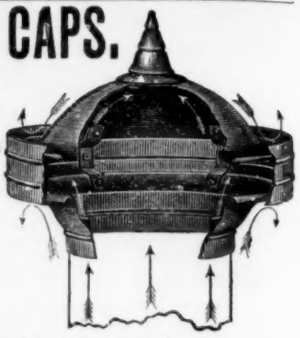

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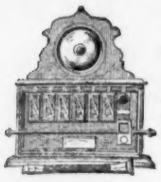

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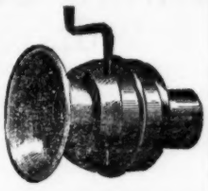

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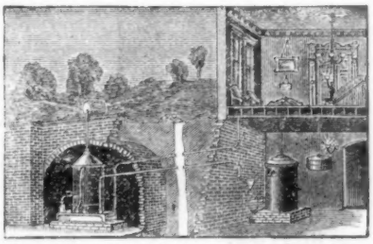

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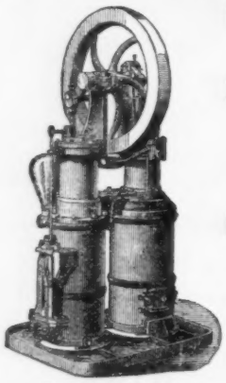

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CONTENTS.

SUMMARY: —
The New York Monument to General Grant. — Some Suggestions as to what such a Memorial should be. — The Semi-Annual Convention of the State Architectural Association of Iowa. — Rejecting a Town-Hall through Fear of Future Repairs becoming Necessary. — When are Trees Real Estate, and when are they not? — Hints on Hospital-Planning. 109
CARVING AND FURNITURE. 111
THE CAUSE AND PREVENTION OF DECAY IN BUILDING-STONES. . 113
THE ILLUSTRATIONS: —
House at Kansas City, Mo. — House at Nahant, Mass. — Design for a Music-Hall at Buffalo, N. Y. — View on the Canal at Bruges, Belgium. — Palazzo del Comune, Piacenza, Italy. 114
TALL CHIMNEY CONSTRUCTION. — IV. 114
DANGEROUS STRUCTURES. 115
DECORATION AND FURNISHING. 116
COMMUNICATIONS: —
Who should put up the Cresting? 117
NOTES AND CLIPPINGS. 117

IT is quite enough to give enthusiasm a chill, this reputed intention of the New York Grant Memorial Association to raise one million dollars for the monument it hopes to erect, and certainly enough to make one recall how rare is the man or body of men that can be safely entrusted with one million dollars which are to be converted into a monument that in more than mere brute expensiveness shall justify the outlay. The structures in this country that have been designed with the foreknowledge that there was a million of dollars to spend on the work could be easily counted — if indeed there are any — and not one of them is a monumental structure. Few can picture to themselves what or how large a structure can be built for such a sum, and the few who can do so can probably keenly appreciate the gravity of the possibility of erecting a mere discordant mass,— overloaded with frittering details, to the use of which the designer was invited by the necessity of expending one million dollars, — instead of a monument which in true art value shall fairly represent the money, and which there are so few capable of designing. As a unit of measurement showing how much in actual mass and how much in architectural and decorative treatment could be accomplished with this magnificent sum, we suggest that the committee and others consider the pedestal of the Statue of Liberty, which will probably cost less than one-third of the sum it is now proposed to raise. To be sure it is safe to reckon that ten per cent of the sum will be wasted, as usually happens where committees undertake such work, and that another ten per cent or more will be absorbed by salaries, experiments or what not, so that there will only be three-quarters of a million to spend on the monument itself, and by so much will the city be saved from the possibility of perpetuating a too overwhelming failure. By the time this is read perhaps one tenth of the desired sum will have been raised, and if the appeals which the Association is now making to the country at large which assert that their endeavors are of "true National character and importance" are heeded, the other nine-tenths may in time be raised. But we advise all people outside of New York who desire to contribute to the Nation's monument to General Grant to wait until Congress meets, for it is only probable that steps will be taken at once to erect a national monument at the Nation's capital.

WE have seen it stated that funds are being raised at nine different places to erect as many memorials, but we have noticed only the subscriptions at New York, Philadelphia, Chicago and Fort Leavenworth. Still it seems likely that those who take part in our own competition, which closes in another fortnight, will find that their endeavors may be appreciated in one or another of these places. Meanwhile editors and correspondents are busy making suggestions as to what character these monuments should have, — suggestions which to the instructed have their amusing side. For instance, the Springfield *Republican* advocates the arch because it is "the most permanent of all structures raised," and in support of this says that there were "over twenty arches in Rome," and settles the question of the permanency of arches by ingenuously recording that "two have stood to this day"! while a Kansas lady recommends that the pedestal be "a triangular temple of iron, paper and stone," which she thinks would be "entirely modern." For our part we have only two suggestions to make, one that when the moment comes to raise money for the Nation's monument the united assistance of the fourth estate be secured, the editor of every newspaper in the country being made *ex officio* a member of the soliciting committee, who on one and the same day shall urge their readers to make each his contribution before night closes. If Congress will enact that the sum so raised shall be doubled out of the National Treasury there would probably then be in hand quite enough to do honor to the memory which all desire to perpetuate. The second suggestion we offer to the New York Association. If it be their intention to accomplish something worthy, unique and lasting, let them abandon thought of mortar, stone and bronze, and consider that they have quite within reach an unparalleled opportunity of taking advantage of the handiwork of Nature. Hewn out of the living rock on the face of the Palisades a unique and creditable monument could be created, whether, after the manner of the rock-temples of India, a structure of architectural lines and forms, or like the Lion of Lucerne a sculptor's creation only, or a work where sculptor and architect could combine their skill in fashioning a colossal sculptured frieze perhaps five hundred or one thousand feet long, just below the crest of the cliff, with architectural terminals and supports. One million dollars could accomplish more here than at any other spot to which materials must be transported and when there hoisted into place, thus consuming no inconsiderable portion of the fund in ineffective freight charges and wages. We trust that it is not yet too late for some competitor to give expression to these crude suggestions.

THE State Architectural Association of Iowa, as we learn from the Des Moines *Register*, held its semi-annual meeting at Colfax a few days ago. The attendance was large, and the proceedings seem to have been very interesting. Among the topics discussed were the Stockslager bill, relating to the design and supervision of Government buildings, in which certain modifications were decided to be advisable; the best form of building contracts; the advantages of association to the professions; rules of practice and rates of compensation; the relation of architect and client; and the State building laws. The Association voted to recommend certain changes in the latter; and showed its wise zeal for technical education by ordering memorials to be presented to Congress in favor of the public encouragement of architectural students, by methods similar to those employed abroad; and to the State Government of Iowa, praying for the establishment of a chair of architecture at the State University. Mr. Illsley of St. Louis, President of the Western Association of Architects, took part in the deliberations, which seem to have afforded an admirable demonstration of the value of State organizations as a most efficient means for advancing the interests of the profession. To refer to a single point only, the recommendations of the meeting which are most likely to be acted upon, and will, if followed, as is very likely to be the case, perhaps result in more good than any others, are those addressed to the State Government on the subjects of architectural education and the building laws; yet such recommendations would be quite out of the province either of local societies or of such comprehensive bodies as the Western Association or the American Institute, and if made by any of these would certainly be disregarded or resented by the State Legislature. There is so much work to be done in the way of correcting and reforming the current habits of building that architects, particularly in their capacity of members of associations, who will have that work to do, should keep constantly in mind the fact that nearly all the conditions under which people in this country live are established by State legislation, as distinguished from local regulations or the enactments of the Federal Congress; and that if they wish to effect any improvement in those conditions they can in most cases do so only by application to the State Government. To secure attention to such applications it is usually necessary to show that the people of the State, not of a particular town or

city, desire the legislation asked for; and if this can be shown there is no further difficulty. By their very constitution the State associations are assumed to represent the technical interests of all the people of the State: there is no danger, as there might be in acting on the recommendation of local societies, that enactments desired in one town might be furiously resisted in another; and whatever they advise seems, to the average legislature, not only worthy of attention, as proceeding from a body whose jurisdiction extends to the same territorial limits as its own, but particularly suited for speedy embodiment in a statute, on account of the probability that no one will appear to oppose it.

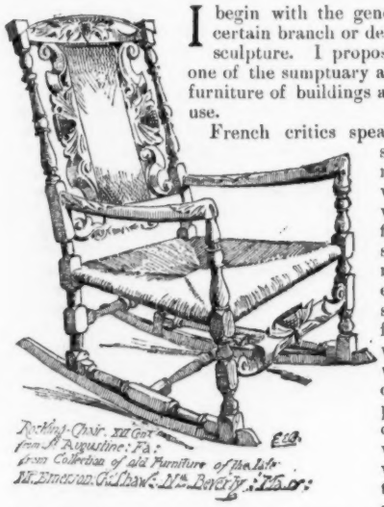
ONE of those singular miscarriages of generosity which occur rather too frequently in this country to cast much credit on our discrimination is described in the recent New York papers. It seems that a certain Mr. Van Schaick, a rich citizen of the town of Westchester, died there five years ago, leaving by will a bequest of fifteen thousand dollars, to be expended in the erection of a free reading-room, as a gift to the town. The executors built a handsome reading-room, at an expense of ten thousand dollars, which was completed in 1882, and prepared to turn it over to the town authorities, with the remaining five thousand dollars of the bequest as a fund for stocking the building with books and furniture. The authorities, however, refused to have anything to do with the structure, and it has remained since its completion in the hands of the executors. Not long ago, the rest of the estate being settled, the executors found it necessary to have the reading-room definitely disposed of, and insisted that the town should take some action in regard to it. A town-meeting was called, and it was explained to the citizens that it would cost about twelve hundred dollars a year to pay the necessary expense of maintaining the reading room, whereupon they voted unanimously to reject the building and the money, which still remain in the executors' possession. We suppose that there must have been some condition in the deed of gift, requiring the town to maintain the reading-room in a certain way, but there are so many modes of evading the intentions of persons who are no longer capable of seeing whether their wishes are carried out that we are rather surprised at the rejection by the Westchester people of a building which could probably have been converted later with impunity into an engine-house or stable. When a few more of these examples have accumulated, it will be worth while, we think, for some one to write a book on the abortive charities of this country. Something of the kind has been done for England, or rather for London, where many curious stories have been collected; and the American instances would furnish a good deal of interesting matter. To say nothing of the Touro charities at Newport, founded for the benefit of the needy Jews of a town which no Hebrew has inhabited for many years, there are in another New England town two churches, both built by private munificence, and dedicated to the Christian religion upon conditions which no one is willing to fulfil, so that they stand from year to year empty. The condition imposed upon one of these is, if we remember rightly, that a certain service-book, composed by the builder of the church, shall be used in it, but this single stipulation is sufficient to keep everybody out of the church precincts.

A CASE came up in England the other day, upon which the intellects of the judges seem to have been greatly exercised. It appears from the *Builder* that a certain gentleman who owned estates in Cumberland had kept parts of them as forest, many of the trees being larches. A year ago the district was visited by severe storms, and twenty thousand larch trees, valued at about as many dollars, were blown down. The owner of the estate was taken sick about the same time, and died before giving any directions as to the disposal of the prostrate trees. In England, as with us, real estate, after the death of its owner, is divided among his heirs in a different way from the personal estate, and the executors, as trustees for those heirs who inherited the personal estate, took it into their heads that the broken larch-trees lying on the ground were personal property, and laid claim to them for their principals; arguing that although trees growing naturally undoubtedly belonged to the real estate, trees lying broken on the ground were no longer real trees, but something else, and as miscellaneous or nondescript articles scattered about the premises would be personal property, these broken trunks ought to be regarded as coming under the same category.

THE heirs of the real estate, in contesting this claim, took the ground that trees should be regarded in the same light as buildings in their relations to the land on which they stood. It is a well-defined rule in England that buildings attached in any way to the earth form a part of the real estate, and cannot be removed by a tenant, even though he may have built them at his own expense, so that tenants who wish to erect conservatories or other structures which they can enjoy during the term of their lease, and carry away with them when it expires, are obliged to make them completely portable. According to this principle the larch-trees, which, although overturned and uprooted, were connected by a few fibres with the earth, still constituted a portion of the real estate of their deceased relative, actual separation of the trunks from the roots being necessary to convert them into personal property. This singular dispute was tried twice before the highest court in England. On the first trial the justice held, with the executors, that broken trees were no longer trees, but something else, and ordered judgment for the plaintiffs; but an appeal was taken to the full bench, and the Lord Chancellor himself pronounced the decree which reversed the former decision, and awarded the property to the owners of the real estate, saying that if any trees had been severed, even though some of their broken fibres were covered with earth, they would belong to the executors, but so long as a tree remained attached to the ground by ever so slender a fibre it was real estate, and went with the land to which it was attached.

THE *British Architect* has lately contained an excellent little series of articles on Hospital Planning, in which we find some points which are new to us, and will be, we imagine, to many of our readers. All architects understand the main principles of hospital construction, and know that isolation of patients, and ventilation and sunshine in the wards, are the requirements to be satisfied before all others, but every one may not be aware of the thoroughness with which these requirements are now fulfilled in the best work. According to the writer in the *British Architect*, twenty-five patients to the acre of ground is considered a reasonable allowance in the most modern Continental hospitals, and the wards are so spaced over the site devoted to the hospital as to secure about this proportion. Unless the area is very limited, all hospital wards of the best class are now built in one story, but in case of absolute necessity the medical wards are made two stories high or more, surgical and infectious wards remaining in all cases of one story only. The wards are also, in the most modern examples, completely detached from each other and from the administration buildings, even the open corridors which were once thought necessary being suppressed. This, of course, occasions a certain amount of inconvenience in bringing supplies from the kitchens and administration block to the wards, but the cooked articles from the kitchens are kept warm during transportation by being placed in covered iron trucks with hot-water jackets, and the annoyance to the physicians and attendants incident to going out of doors whenever they pass from one building to another is considered to be more than compensated by the greater security of the patients from infectious or communicable diseases. The principle of isolating the wards from the ground, by raising them upon a low basement open to the air, is now universally adopted, the height of the basement being usually restricted to three or four feet, so that there may be no temptation to use it for storage, to the detriment of the healthfulness of the ward over it. Within a short time an innovation, undoubtedly suggested by the experience of military surgeons, has been introduced in the best civil hospitals, and will probably become an important feature in the planning of future buildings of the kind. This novelty is the addition of large open balconies, closed only at the ends, to the wards, into which the beds of the patients are moved during the summer months, remaining there night and day except in stormy weather. At Halle and Dresden, neither of which have a particularly mild climate, this arrangement has been adopted with great success, and the Bethanien Hospital at Berlin has been altered to conform to the new idea.

CARVING AND FURNITURE.[1]


Rocking-Chair. XII Cent.
from St Augustine, Fla.
Loan Collection of old Furniture at the late
Mr. Emerson Coleman's, Mrs. Berry's, Hoor.

I begin with the general consideration of a certain branch or development of the art of sculpture. I propose to treat it mainly as one of the sumptuary arts, concerned with the furniture of buildings and houses of everyday use.

French critics speak of wood-carving as sculpture in wood—correctly as regards the word. It is sculpture if we produce a figure, a flower, or a leaf out of solid wood or any other material. But the processes of what we call sculpture are different from those of carving with mallet and chisel, with which we are now concerned. I shall apply the word sculpture only to wood-work in very hard materials, in which the surfaces have to be bored and scraped, and where the character of the design is suited rather to the gallery or the shelves of a collector, than to the decoration of walls or furniture.

Now when any one not a wood-carver or furniture maker by profession ventures to assume the master's chair, a serious question is forced on his attention — at least on mine — and it is this: How comes it that any one should be lecturing on one of the arts connected with daily life, except a professor or a master to his own class? And it must be answered that wood-carving, as a sort of necessary accompaniment to the architecture of the day, seems to have fallen into desuetude. Sumptuous and well-made furniture is produced in London and other large cities; but carved cornices, carved panel-mouldings, carved fireplaces, doorways and so on are so very rare that we have to rouse attention to the carvers' art as if it were a revival. Nevertheless, the value in which carved work is held may be measured by the prices at which the fragments of Old London are being bought up, and the place which many of these fragments occupy in our national museums.

This disuse of carving in modern houses being our excuse, I hope we do not waste time in devoting an occasional evening to a subject in which I am myself so deeply interested.

Before going further, let us dismiss with a word or two what has been called sculpture in wood. Box is the wood most commonly used in wood-sculpture; it is of slow growth, hard, close-grained, with narrower alternations of hard and soft in consequence, and less liability to shrink or split than is the case with oak or pine. It will retain sharp-edged lines of relief, incredibly fine, as we see in some modern wood-carving. It is in use for figure sculpture and other subjects requiring knowledge and skill of the highest kind. There is, however, a good deal of bold carving in box and pear, cut out in bold curves and sweeps, as if the wood were no harder than pine. The Kensington collections contain curious examples, the work of Italians of the sixteenth century. I should call all such work carving rather than sculpture, because of the character of the work.

2. I think it may be maintained, looking at Old London, that wood in our climate is the due complement of stone and brick. It is the inside lining of which the hard material is the outer coat. Wood panels are not freezing to the touch. They make interiors warm and comfortable, as well as rich and dignified. From the ease with which the materials can be cut, we get effectual decoration in actual relief of light and shade; and, once done, it is found to be as durable as the walls of the house, and in no danger of those dismal chips and peelings to which the plasterer's work is so subject.

I was struck with the contrast between the present system and the older one, by what I saw in a beautiful country house not long since. The house itself is old, the exterior finely carved in stone. The interior has been refitted and arranged at a great cost. The woodwork of shutters, and dados in two woods, is admirably fitted. All that the steam plane and modelling irons can do is finished to perfection. On the other hand, when I looked for carvings, I found lines of moulding, key-frets, and so forth, not carved in wood, but in lengths of stamped putty or other compositions glued on. In no long time I observed much of this applied composition curling up and coming off. The builder had to renew it. It struck me with astonishment that where so many thousand pounds were spent on joiner's work, one or two hundreds could not have been devoted to carving.

I do not know what convulsions of society or phase of manners has made so important a change, and eliminated from our houses decoration so necessary for their completion. It may be that the wars with which this century opened were a turning-point in history with regard to the plastic arts. Perhaps when large London estates were rapidly covered with houses, that scourge of London arose, the modern speculative builder. Calculating on a rapid fortune, he invented one house. That one house has been repeated *ad infinitum* —a forlorn design it is, and the example so profitable to the builder has covered modern London with the dreariest streets to be seen anywhere in Europe.

It seems useless to discharge these thunders when the work is done, and so it would be were better prospects hopeless; but, in my opinion, this is far from being the case. The work of Mr. Norman Shaw and some other architects gives me some solid grounds of hope. They have grappled with a difficulty obvious to reflecting minds. All men are not agreed in their likes and dislikes, occupations or habits of life. Why should they all be compelled to live in houses of one and the same type and shape? The gentlemen I have named have tried to fit the house to the man or family that are to live in it, not to force the inhabitants into houses that do not suit them. I do not profess to admire all I see in Queen Anne houses. I do not care for mere eccentricities, nor for details designed merely as quaintnesses, and put where they are without any corresponding convenience or advantage. But in general I think the inventors of our present red brick houses have done an essential service to London.

I refer to architecture because it is absolutely necessary to do so. Furniture, whatever we include in the term, is intimately connected with the house it furnishes. To treat of walls is to consider how the architect has built them, and how they ought to look inside when his house was finished. I do not reckon the house in the modern street —in Cubittopolis for instance, or the streets abutting on the New Road — I do not reckon them as worthy the name of architecture. They are bricklayers' and carpenters' work, and nothing more. No mind whatever has left its stamp upon them. If carving finds its way into such houses it has been purchased by the occupier, who wants to make the one he lives in as unlike its neighbors as possible.

Not so in the case of Old London; the narrow streets and lanes that were built after the fire contained houses of which many noble examples yet linger in the city. Consider, on the other hand, the vast and imposing public buildings that have risen between Palace-Yard and Cromwell Road. It is worth while to ask what part such beautiful and effective decoration as wood-carving plays in the interior of those buildings, if we except the Parliament Houses of Barry and Pugin? So far, then, as to the connection that there ought to be between architecture and carved wood; architecture in general, and that revived brick architecture in particular, of which I have had occasion to speak.

3. Now let us consider more particularly what the opportunities of the carver are, and what different methods of treatment he has at his command. I say *he*, but I ought to add *or she*, for we have many excellent lady carvers. What are the carvers' opportunities? There are the beams of which parts of all houses are constructed, and which, being of wood, are to be carved, *when the style of the architecture exposes them to view*, as in church and hall roofs, rooms in which the joints of the floor above are exposed, etc. As beams and timbers are concentrations of strength, they often have to bear walls that exceed their thickness, and project beyond their edges, such as door lintels, architraves, and the like. In these cases it is the angular edge, or so much of the edge as will not impair the strength of joists, or rafters, that can be carved effectively. In the case of a post, such as a stair newell, the king-post of a Gothic roof, both edges and sides can be carved, extra length of wood being allowed for the purpose above the stair newells, or below the king-posts, without interfering with the actual purpose of these posts, either in reality or apparently, apparent strength being necessary to due effectiveness.

As to running mouldings worked on edges, whether of beams, joists, rafters, or rails of any kind; or again, on the angles of door and window jambs and lintels, or on the framework of panels, the distinct rolls and hollows of which they consist must be limited in number. There should never be less than three, that a due proportion between the members may be maintained, nor should they be too numerous. Brackets have so many distinct ends projecting over the other. Cornices are made up of rows of brackets, or are one continuous running bracket. In this way cornices represent thickness of wood projecting from the wall one above another, and should represent, say, an upper, a middle and a lower projection. We ought to preserve this idea in complicated cornices, and give emphasis to the middle feature; then there will be a group of lines above it and a group of lines below. These groups break the angle between roof and wall, or anything that represents roof, such as the top of a chimneypiece, of a doorway, and so forth. When you see an unmeaning succession of repeated mouldings, as you often do in builder's decoration, you will feel that the real idea of their relation to each other has never been grasped.

4. *Wall Surfaces.*—If from solid timbers we pass to wall-surfaces, it is obvious that large wall-spaces can only be covered by framed panelling. The framework must be of sufficient thickness to be grooved to take the panels, and this extra thickness has to be relieved from the heavy appearance of a mere thick edge. We have to ease down the edge by mouldings or lines in relief, some bolder, others finer, as the edges of the frame decrease till they meet the panel.

In a large room cut up into panelling, the general effect will depend on the size and proportions of the panels, to height and width of the room, and of the rows of panels to each other. Panelling requires to have some rows taller than others, and to have upper and lower rows of less height than the general order. Upon the size of the panels will depend the boldness and size of the mouldings. We meet with

[1] A lecture by J. Hungerford Pollen, delivered before the Society of Arts, and printed in the *Journal* of the Society.

large panelling in which the mouldings are planted into the junction of frame and panel, and exceed the thickness of both. I do not think it a good feature, and it is often a vulgarism. In carving mouldings there are two rules to observe — one, that the general form and outline of the original lines, or bars, or hollows moulded by the plane have to be preserved; another rule is that no work put upon these features ought to be allowed to quarrel with the direction of their lines. Foliage or plaited ornaments should run at right angles with that direction, and be delicate enough to lose themselves at a distance, at which the original moulding only can be distinguished. But in all large surfaces of panelling the greater quantity of moulding will be worked mechanically by a plane-iron filed to the curvature required. If you examine the small panelling of the fifteenth century, much of it will be found to have been executed by a tool worked by the fingers, *after the wood has been framed together*. The mouldings die down without meeting in the angles, but these mouldings are necessarily small and shallow. On furniture, chests, and other more important joinery, mouldings seem to have been cut throughout with the carver's gouge.

Here, then, we have the treatment of edges of panels. How effective they can be made I need not say. Panels are sometimes made of wood, so thick as to be brought up to the level of the rails that frame them, and reduced by wide bevellings to meet the grooves of stiles and rails. The thick parts are left with a defined edge, as though a thin extra plank were added to the thickness. I consider that the proper purpose of this thickness is to allow of carving. Carving in these parts has to be in very low relief — historical subjects or leaf-work compositions. Figure-carving in such places is sometimes of extraordinary merit. Examples can be seen among the cabinets of the Soulages collection in the Kensington Museum.

There are, of course, parts or features of all interiors in which the carver has to put forth all his powers, those in which bold relief can be employed — door-heads, fire-places, and other prominent features. Here will come figure-work, bold foliage, heraldry, and the like.

5. *Piercing and Turning.* — A different class of carved work consists in pierced carving; screens, fittings, of openings of various kinds in which light has to be seen through, and not thrown on to wood-work. And again, another in the work of the turning-lathe. No combined wood-work, on a large scale, can be carried on without the help of the lathe. We have but to look at old houses in our own country, and, indeed, may refer to the paintings and sculptures of antiquity in which furniture is represented, to see how large a part was played in its construction by the lathe.

In the sixteenth century, German turners showed astonishing ingenuity in the eccentric motions contrived in the turning-lathe. But here I am only thinking of the commonest operations of that engine, and we can hardly appreciate how effective its action can be made. I will show, in a later lecture, some examples of Arab turned work.

In these various operations there is room for infinite variety of treatment, and judgment as to the best way of disposing one's powers with due economy of labor and cost. Employers have certainly to be encouraged to employ the carver; but to make his work effective it is indispensable that he should be able to show it in all varieties, whether abundant in quantity or not.

6. Generally and broadly speaking, what is it that makes carving effective? Not extreme skill in cutting, nor absolute imitations of nature, however good. It is a knowledge of, or rather, an habitual recognition of, laws that govern all composed design, which becomes what we know by the word *feeling*. We have spoken of mouldings on the edges of wood-work, and of compositions of foliage and figures, heraldry, and other ornamental composition. What is the law that governs the due prominence and arrangement of lines and masses? I consider mouldings as bars or borders of light, separated just so much from the surface to which they form an edge as to show their outline. This first edging is the largest and widest, as it is on the thick portion of the wood; on its shaded side it dies gradually till it ends in a smaller roll, and then, perhaps, a sharp arris. Here is a group of lines carefully adapted to each other. If we draw a doorway or an opening, an agreeable effect is produced by the mere use of a few lines of pencilling to indicate the gradual introduction from the light to the shadow. Mouldings produce a similar effect in wood-work. Mouldings may vary indefinitely in the proportions of the light and shadow that run along them, and the way these elements are contrasted. If you watch the growth and decay of styles of architecture, it is in the multiplication, or breaking up, or loss of meaning of mouldings that these stages of decay and corruption are most obvious. Mouldings form three-fourths of the carver's work.

7. *Compositions in Full or very High Relief.*—Carry this principle farther into the composition of carved groups, such as fill sunk panels or pediments. One may be able to carve the figure of a man, a lion, or a piece of foliage, but so to combine a number of such figures as to make each of them evident, to give the grace or the force that belongs to each of them respectively, and when combined to form an agreeable and well balanced composition of masses and line of light, here is the difficulty.

A picture is a little passage of history real or supposed, a piece of dramatic action — or it is a view of nature. Composition, a graceful arrangement of line, is of importance in either case. But to put together things that differ in nature and structure from each other, a man, an animal, a scroll of foliage, in the way required for the decoration of a pilaster, a pediment or a piece of wall, we have no such guide as the painter has for his picture. There is no story to tell, no connection as in the elements of a landscape. They must be brought up to the light, be combined or separated, or be partly concealed by scrolls or leaves in such ways as will look well even before the carver has entirely satisfied us what he intends his prominent masses to be, while still unfinished. The greater the dignity of the group, as, for instance, one composed of men only, as in a Greek pediment, the more distinct must be their shapes, and the fewer decorative additions near them. The Greeks colored their pediment compositions to make them more distinct than they could have been in mere white marble. As in mouldings there are larger and smaller lines, so in carvings in the round or in high relief, we have to compose the decoration in such ways as not only to give prominence to the most important portions, but generally to balance one side of it with its opposite, to have also a subordination of small to larger masses. Sometimes a balance is maintained by a repetition of detail on opposite sides of a central stem or figure. Sometimes in a more subtile manner, not by a repetition, but by an equivalent, in different parts, perhaps, of the space to be filled.

8. *Relief.*—Regarding the amount of detachment or absolute relief that good carving in such cases ought to have, it will depend on the character of lightness and of movement the carver wishes to give his work. Generally, carving of this kind should never lose touch in appearance from the mass to which it belongs, and should die gradually into the shadow. Much excellent carved work loses value from too much under-cutting, even in the work of so great an artist as Grinling Gibbons. Further, if carving is not to appear as if it floated in a disproportioned sea of shadow, neither should it be so crowded up as to become indistinct. I have seen sideboards in some of our great exhibitions in which much careful and laborious work was spoiled by ill-arranged crowding of figures and other details. Nor can decorative carving be carried, except to a limited degree, to the direct imitation of nature. As nature would not join animal and vegetable life together, so we are to represent natural life and living objects not as if we were making definite pictures of them, but such features of their nature as will gracefully express the arrangements of light and lines as are required for our immediate purpose, and no further.

The value of light and its concentration on masses of relief is of the first consequence to the carver, grace of line is second. Not that the two are separable, but the composition of masses seems to me the more difficult of the two.

9. I have alluded to pierced work; it is either made in scrolls of foliage or plaiting, such as we see in the furniture of the last century. Tables, chairs, rows of corner shelves, and so on. The legs and backs of chairs and tables are pierced, and the edges of tables and shelves, surrounded by tiny galleries of pierced mahogany. These objects require no great amount of knowledge to design, and scarcely deserve to be called carving, but they are not devoid of a certain elegance and agreeableness; generally, the material and workmanship are admirable. Oriental wood-carving presents us with frequent screens and large even spaces broken only by piercings, and the piercings less in extent than the solid portions. They are, if rightly placed, full of value in general arrangements of wood-work; broad even spaces expressive of repose, having the character of minute workmanship and richness, though mere repetitions of some simple pattern.

Here I leave off this short review of what seem to me the more important divisions of the carver's field of work. I say little as to what he may attain to as a sculptor, or a carver of images, statuettes, and other fine examples of his skill. I want to confine your attention to subordinate and decorative work. A carver's first duty, no doubt, is to carve, to have a light and subtile hand, and a perfect command of the gouge and chisel. But the most dexterous of carvers runs the risk of faults which may spoil his efforts. He may be uncertain of his aim, not knowing clearly what he wants. He may be weak, wiry and dry, or ostentatious and redundant; feeble, in short, or vulgar, or both. He ought to know what he wants, why he wants it, what the style of his walls requires for its due completion in each instance. If the work proposed is new to him, he has to master the spirit of it to the best of his abilities. He has to decide how to keep his carving light without loss of strength; full and sufficient, without crowding and redundancy; orderly and balanced with a judicious distribution of the work he can afford to bestow on his wall, or room, or house, or cabinet, or whatever he takes in hand; to secure unity of design throughout the whole, whatever variety of detail he may employ in different parts.

The Ravenna Mosaics. — The mosaics in most of the churches at Ravenna are undergoing renovation: in fact St. Apollinare Nuova and the Baptistery are the only ones in which a scaffolding is not erected for the purpose. And the latter of these two is threatened. The mosaics in it are not in a good condition, and appear to have been picked off as relics by visitors at their will. There is, and has been for some time (judging from the fact that it is reported in most guide-books) an idea of raising the whole building by machinery. At present it is what might be called an open sepulchre, only surpassed by the catacombs of St. Sebastian at Rome. Ravenna should not be visited by English travellers during the hot weather, as in most of the churches, in which places all of the interest is centered, notably St. Vitale and St. Apollinare in Classe, there is stagnant water, which has a horribly putrid smell, within eighteen inches of the surface. The drinking water, which is much the same, is also very bad, and if taken, even with wine, produces uncomfortable results. — *The Builder.*

THE CAUSE AND PREVENTION OF DECAY IN BUILDING-STONES.[1]

THE origin of the investigations as to the cause of the decay of building-stones was the observation by the corporation of the Trinity Church, New York City, of signs of decay in the stone of some of the structures under its charge. The investigation was intrusted by that corporation to Professor Egleston, and authority has been given to publish the results. The building-stones mostly used in the United States may be classified as granites, sandstones and limestones. The decomposition of the granites is slow, and has been carefully studied. An example is the Egyptian obelisk, now in Central Park, New York, which has stood for two thousand years in a dry climate. A crumbling decomposition had occurred to some extent before it was brought to America. Since its arrival in New York the disintegration has been very rapid. Pieces can be picked up after every storm. If it be not in some way placed under cover, the injury will in fifteen or sixteen years be probably beyond repair.

It is usually supposed that the sandstones that are used for buildings are homogeneous and composed of very few substances. The examination of the stone of Trinity Church, however, shows that it contains twenty-six different minerals, none of which were recognizable without the aid of a microscope. The sandstones may be divided according to their binding material, as those containing an organic, a ferruginous, a calcareous, or a silicious binding material. Those containing the organic material decompose and go rapidly to sand. Those containing the ferruginous binding material are very uncertain, the amount of iron frequently being just sufficient to hold the sand together, and sometimes after a slight exposure the material decomposes entirely. Those containing a calcareous binding material are affected by the weather, and after a certain time in large cities this calcareous cement is entirely removed and the stone goes to pieces. The silicious binding material is not affected.

As an instance of the way in which these stones decompose: the Cathedral at Rodez, in the department of Aveyron, France, was commenced in the eighth century; the lower part of the building was finished three or four centuries later, but the upper part was finished towards the close of the last century. All the mouldings of the lower part are as sharp to-day as the day they were cut, while the upper part is a ruin. The stones of the lower part were selected while building was done by a religious fraternity with great care. The upper part was done with less care, and stones liable to decomposition were used.

The limestones may be divided into those which are essentially composed of carbonate of lime; the dolomites, which are carbonate of lime and magnesia; and a mixture of the two. Limestones themselves, or dolomites themselves are not very easily affected; but when there is a mixture of the two, the limestone is very apt to be dissolved out, leaving the dolomite behind. If, as in the case of the quarries in Lee, Berkshire County, Mass., the two are about equally divided, the limestone is frequently dissolved out, leaving the small dolomite crystals as sand.

The investigations made of the stones used by Trinity Church, on the building itself, showed that the decomposition is at a maximum at or near the foundations, and continues as such to the height of about ten feet or fifteen feet, but it shows itself mostly at or about the water-table; that it then gradually diminishes, until, at about sixty feet or seventy feet the action is very much diminished, and above one hundred feet no decomposition whatever has taken place, and the stone is harder than it originally was. The explanation of this decomposition is at first sight not very clear, but it is noticed that wherever there are projecting surfaces which are flat, on which the water will stand and through which it will sometimes pass the decomposition is always prominent. Wherever these projecting pieces are not undercut, so that the water will run back upon the under surface, or wherever they do not project sufficiently to prevent their pouring or dropping upon the stones below, there the decomposition is the greatest. Wherever the stone is thin, so that the water will filter through it, the stone has crumbled entirely. This action is owing to the fact that city gases contain a very much larger amount of acids, notably carbonic and some sulphuric acid, than ordinary country air, which are dissolved in the water and attack the stone. As these gases are more confined in cities than they are in the country, the lower part of buildings is most attacked; but where they have the opportunity (as higher up) to be diluted in an excess of air, there the action is only very slight. Carbonate of lime is very soluble in water containing carbonic acid in solution, and as this is by far the largest ingredient of the impurities of city gases, in the long run it will dissolve out the cement. The way to prevent it is to in some way waterproof the stones, so as to prevent the action of the air. This should be done at the foundations, by preventing the creeping of the water from the ground through the stone by putting a layer of asphalt above the foundation stones, and then by protecting the stone itself by some means.

The experience in the Houses of Parliament in England has been that, unless the stone is protected upon all its sides, most of the materials which have been used are of little or no use. A careful examination showed that the decomposition went on upon the outside, and that the flaking continued with every application made, except in the single case where sulphur in solution was applied to the stone, and this, after a lapse of over twenty years, has just commenced to flake.

In the case of the limestones, a noticeable decomposition is that of a marble tombstone beside the Lawrence Monument, on the south side of Trinity church-yard, the upper slab of which was originally highly polished. The carbonate of lime has been dissolved out so as to leave the upper face entirely rough, dolomite crystals being quite prominent, so that no one would suspect that the stone had been polished. Those stones which include minerals liable to decomposition in the air, of course, furnish the disintegrating material for the attack upon the stone.

There is another cause of decay to which little attention is paid, and that is the abrasion of stones from the outside, caused by the action of the wind carrying the dust against them. The destruction caused by this effect is much greater than it would at first sight appear, and, in order to ascertain how far it might act, I made a number of experiments, hurling a sand blast against stones of different textures at a high velocity. The result was that no stone would stand for any length of time against the blast, and even an appreciable weight of diamond was worn away by it in less than ten minutes. The examination of the city dust shows it to be made up of a large number of materials, including sharp quartz sand, a considerable amount of iron, and other materials which are softer, but which have a very considerable abrasive power. In many of the churchyards this abrasive power can be seen where the inscriptions on the stones are placed in the direction of the prevailing wind, in which case many of them are worn very nearly smooth from this cause alone, there being no other cause for deterioration.

Slate is a material which is rarely used for buildings, but which answers for certain purposes very well when placed on its quarry bed. When placed in a vertical position it is very apt to laminate, but it also frequently undergoes a decomposition by which it is reduced almost to a clay. This kind of destruction cannot be prevented, but its maximum effect is confined to a very short distance above ground. Experiments made upon the decomposition of stones since the year 1861 have shown, however, that other varieties of stone may be entirely protected by some kind of waterproofing, which, after a building is constructed, can only be applied to the external surface.

There is no necessity for the decomposition of brown stone if the material is carefully selected. Every building that I have ever examined contains some stones that would last indefinitely, and if from the quarry only those were selected which had a silicious cement, there would be no necessity for waterproofing, and we should not have the rapid destruction in beautiful structures which is so common in countries where sandstones are used. The same kind of external waterproofing must also be done upon dolomite and stone; but efforts in this direction have been less successful than upon sandstones. Many methods for the prevention of disintegration have been tried with little success. To secure the waterproofing of the stone, paraffin would be a good material; but it cannot be made to enter the stone without the use of a greater heat than would be possible without injury to the stone. The best material for the purpose is boiled linseed oil. If stones could be dipped in boiled linseed oil, they would not decay, because water could then attack them from no direction.

[1] By Prof. Thomas Egleston, M. Am. Soc. C. E. Abstract of a paper read before the American Society of Civil Engineers at their annual meeting, June 24, 1885.

THE SARATOGA MONUMENT.—The Saratoga Monument Association has commissioned O'Donovan, Doyle and Bissell as sculptors of the heroic statues of Generals Schuyler, Morgan and Gates, to be placed in the niches of the monument, and J. S. Hartley and James Kelly to do the tablet work for the interior; the designs of the architect, Mr. Markham, in which the historic personages are to be portraits, for these tablets are: first, women of the Revolution; second, ladies of the British court; third, the town meeting; fourth, the rally; fifth, George III in council; sixth, Burgoyne addressing the Indians; seventh, transport of the wives of the English officers in their calashes through the wilderness; eighth, Schuyler felling trees to obstruct the enemy; ninth, Mrs. Schuyler firing her wheat fields; tenth, the murder of Jane McCrea; eleventh, Burgoyne reprimanding the Indians for their barbarities; twelfth, Schuyler turning over the command to Gates, surrounded by a group of American generals (all likenesses); thirteenth, the passage in a boat of Lady Acland under a flag of truce to the American camp to visit her husband; fourteenth, the wounding of Arnold at the Brunswick redoubt; fifteenth, the burial of General Frazer; sixteenth, Burgoyne surrendering his sword to Gates.—*Exchange.*

THE ILLUSTRATIONS.

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

HOUSE OF MR. CHARLES E. HASBROOK, KANSAS CITY, MO. MR. A. VAN BRUNT, ARCHITECT, KANSAS CITY, MO.

THIS house is finished in hard-wood; first story brick, second story frame, and presents in a modified form the modern features of the Colonial style of architecture. It has thirteen rooms, exclusive of pantries, bath-room and closets.

HOUSE OF S. E. GUILD, ESQ., NAHANT, MASS. MESSRS. PEABODY & STEARNS, ARCHITECTS, BOSTON, MASS.

COMPETITIVE DESIGN FOR THE MUSIC HALL, BUFFALO, N. Y., SUBMITTED BY MR. H. T. SCHLADERMUNDT, BUFFALO, N. Y.

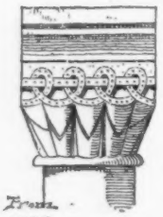
VIEW ON THE CANAL AT REAR OF THE HÔTEL DE VILLE, BRUGES, BELGIUM.

PALAZZO DEL COMUNE, PIACENZA, ITALY.

THIS building was built in the thirteenth century.

TALL CHIMNEY CONSTRUCTION.[1] — IV.

THE GEORGS-MARIEN IRON-WORKS, NEAR OSNABRICK.



THE first chimney, erected in 1857, has a height of 180 feet.

	ft.	in.
Clear width at the bottom . . .	10	0
" " top	7	0
Height of square basement built in sandstone	30	0

Octagonal shaft of bricks; the walls of which are made of six different thicknesses, consisting of one and one-half bricks at the top, and of four bricks at the bottom. (The lengths of the bricks used at Georgs-Marienhutte is ten inches).

Two other chimneys, one hundred and two feet high, have also a square basement of sandstone, and an octagonal shaft of bricks, with a clear width of four feet at the top, and of six feet three inches at the bottom; the walls of these shafts are each twenty inches thick at the top, and thirty inches thick at the bottom.

A fourth chimney erected in 1868 has a height of one hundred and two feet, a clear width of seven feet at the top, and nine feet at the bottom; the shaft is built in four thicknesses of one, one and one-half, two, two and one-half bricks, whilst the base, eighteen feet in height, and made of sandstone, is three feet six inches thick. The shaft of this chimney is built from the base to the top in such a manner that it forms in the circumference four separate parts, which are simply brought in contact with each other without being jointed by mortar.

This construction has been found to answer exceedingly well, and is recommended for chimneys exposed to various temperatures, as, for example, in the case of chimneys connected with coke-ovens; the gases of which are either applied to the firing of boilers, or are allowed to escape directly into the chimney, in the event of the boilers being laid off for cleaning or repairs. The latter arrangements have, however, been altered so far that, with the hot gases, cold air is simultaneously admitted into the chimney.

The most recently erected chimney, built in 1870, is sufficient for twenty of the Cornish boilers, and has a height of one hundred and twenty feet, and a circular shaft of a clear diameter of ten feet at the top, and ten feet ten inches at the bottom. This chimney has no base, and the thickness of the walls decreases in seven steps from four bricks to one brick (ten in each). The circular form has been chosen in order to save the expensive base, and the many-shaped bricks necessary for octagonal chimneys. All the chimneys have been erected without scaffolds, and by conveying the materials through the inner space of the chimney; and neither at the erection, nor during their use has any fault been found.

GROSVENOR-ROAD, PIMLICO, PUMPING-STATION (WESTERN DISTRICT MAIN-DRAINAGE WORKS).

This chimney-shaft of gault bricks and Portland stone dressings, is two hundred feet high, and has quite a campanile-like appearance, with its recessed and arcaded sides. It is a model shaft in its style. The foundations of the shaft rest upon a mass of concrete thirty-five feet square, carried down to the clay.

The shaft is constructed double.

The circular central shaft is seven feet diameter, serves for the smoke, while the outer square casing encloses a staircase consisting of two hundred and twenty stone steps, reaching to the top, which is terminated by a heavy iron capping and stone cornice. It will be thus seen there is some æsthetic reason for the Italian tower-like casing. This square tower measures twenty-one feet at the base, and fifteen feet at the summit.

[1] A paper by R. M. Bancroft and F. J. Bancroft, read before the Civil and Mechanical Engineers' Society. Continued from page 57, No. 501.

Sir J. Bazalgette, C. B., engineer-in-chief; Mr. Lovick, resident engineer.

The bricks were purposely-made, and gradually tapered from eighteen inches to fourteen inches.

The lightning conductor is of copper tube.

CHIMNEYS AT DEN'S WORKS, DUNDEE. — No. 1.

This chimney is —

193 feet from bottom of foundation to point at top.
174 " " ground level " " "
9½ sq. ft. inside at base = 90.25 sq. ft. area.
6 " " " " top = 36 " " "
Contracted at outlet to 25 " " "

It carries away the smoke from —

Fifteen boilers sixty-three feet below base of chimneys = two hundred and twenty-five feet from firing level to point at top. The smoke is conveyed from both of these ranges of boilers to the chimney by a long sloping brick flue or tunnel. Cases sometimes occur where it is necessary to have the chimneys some distance from the fires. Mr. Clegg, in his treatise on the "*Manufacture of Coal Gas*," page 177, says: — At Dolphinholme, in Lancashire, where a large worsted mill was lighted with gas, it was necessary to remove the chimney a quarter of a mile; the flue to same being carried along a field arising about one in twenty.

Four boilers eighty-six feet below base of chimney = two hundred and forty-eight feet from firing level to point at top.

Total, nineteen.

The range of four boilers (each having two flues), consume eleven tons each, or about forty-five tons of coal per week of sixty hours work, or fifteen hundred-weight per hour, and the opening at the bridges of these boilers is one hundred and twenty-three inches ∴ four boilers by two flues = 8 x 123 inches = nine hundred and eighty-four square inches at opening.

$$\frac{\text{984 sq. in. at openings.}}{\text{15 cwt. consumed per hour.}} = 65 \text{ sq. in. for 1 cwt. per hour.}$$

Mr. Carmichael records having made ninety observations on the draught at the bottom of the chimney.

The highest recorded 88
" average " 8
" lowest " 55

In taking the observations, the height of the barometer was noted and the direction of the wind. The changes of the barometer do not show (Mr. Carmichael says) much effect on the force of the draught; it seems most affected by wind, being lowest in a south or south-west wind.

No. 2.

This chimney is —

135 ft. from ground level to point at top.
7 " sq. inside at base = 49 sq. ft. area = 7 sq. ft. for each boiler.
4¼ sq. ft. " " top = 18.06 " "
Contracted at outlet to 13.78 " " = 190 " " " " "

It carries away the smoke from seven boilers, the furnaces being about level with base of stack. They consume about seventy-five tons of coal per week of sixty hours' work, or twenty-five hundred-weight per hour from getting up steam on Monday until stopping on Saturday. The opening at the bridges is one hundred and twenty-three square inches ··· seven boilers by two flues = 14 x 123 = 1,722 square inches at openings.

$$\frac{\text{1,722 sq. in. at openings.}}{\text{25 cwt. consumed per hour.}} = 6859 \text{ in. for 1 cwt. per hour.}$$

When Mr. Carmichael wrote of this chimney, he had made ninety-four observations on its draught.

The highest recorded 875
" average " 75
" lowest " 6

This chimney was built for four boilers, and while so working it collected soot inside to a considerable extent; and occasionally the soot caught fire, and burned out in sparks and showers of smut. When working with the seven, as above stated, it became free from soot, and the surface of the bricks perfectly clean.

No. 3.

This stack being intended to supply only a few boilers, it was made as small and light as possible.

102 ft. 8 in. from ground level to point at top.
4.25 sq. ft. inside at base = 18.06 sq. ft. area.
1.5 " " " top = 2.25 " "
Contracted at outlet to 1.75 " "

When first built, one boiler only was connected to this chimney — the consumption of coal being about ten tons per week.

Of the thirty-one observations recorded

The highest was 537
" average " 5
" lowest " 45

Some pigeon-holes, sloping acutely upwards, were made in each side at the top, thinking, the wind blowing into these, the current being thus directed, it would assist the rising smoke. The effect

No. 506 American Architect and Building News, Sept. 5 1885

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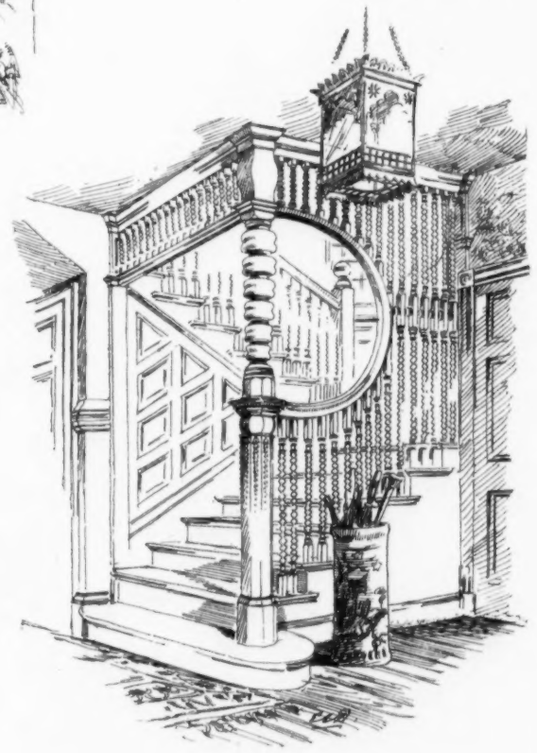
Sketches in Nahant Mass:

"House of Mr S. E. Guild"

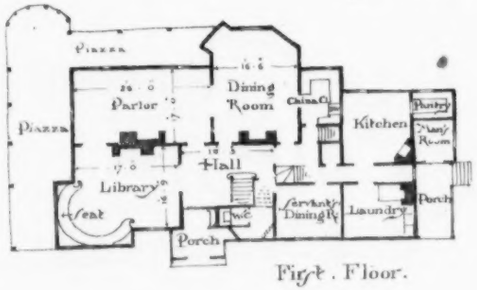
Messrs Peabody & Stearns. Architects.

View of Front.

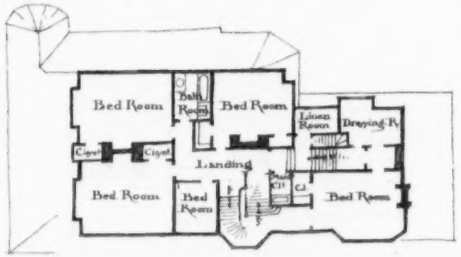


The Staircase

Sketch Plans



First Floor.



Second Floor.

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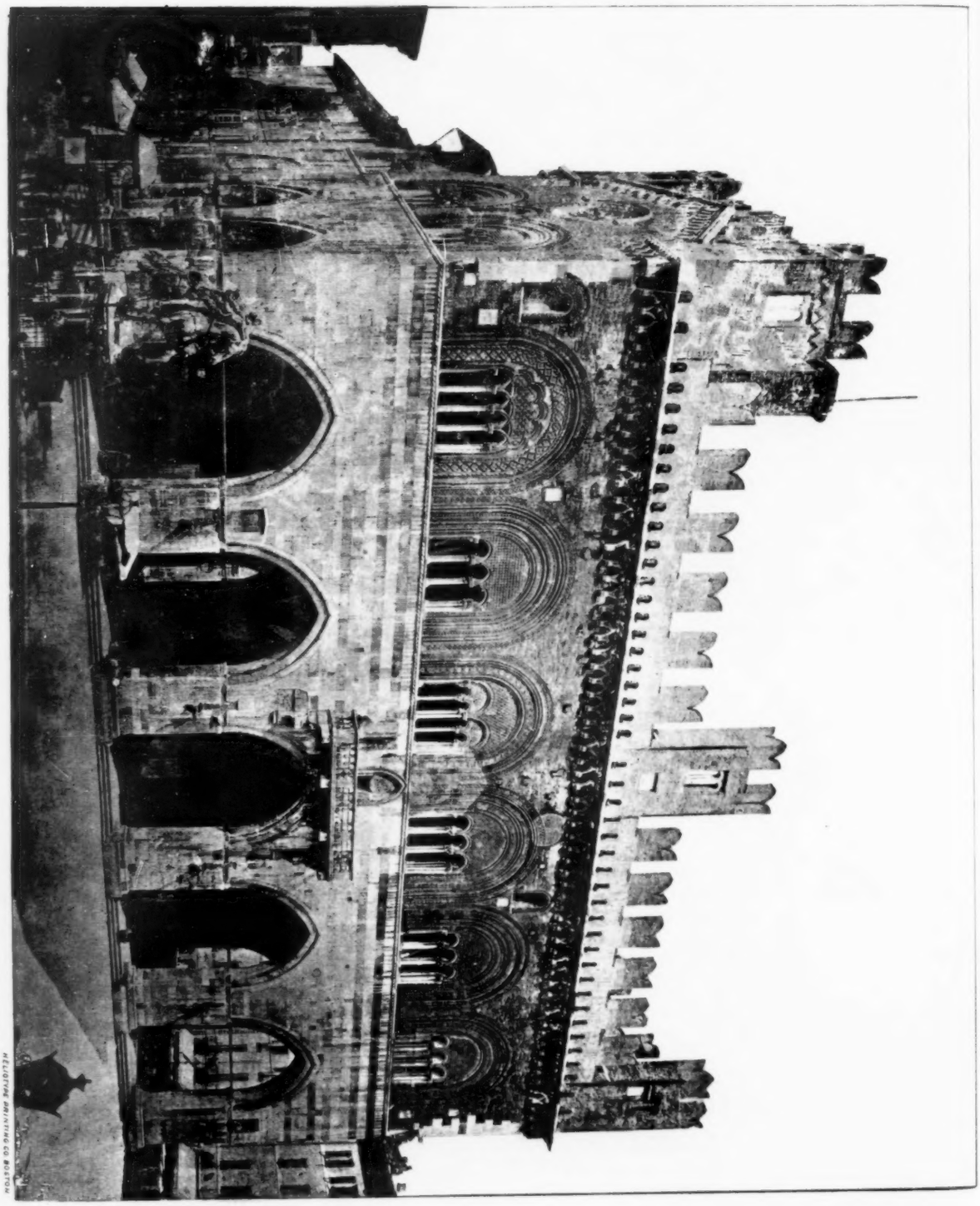

Palazzo del Comune, Piacenza, Italy.

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Canal at the Rear of the City Hall, Bruges, Belgium – 1884.

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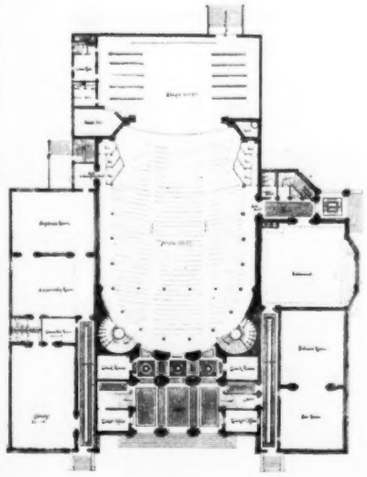
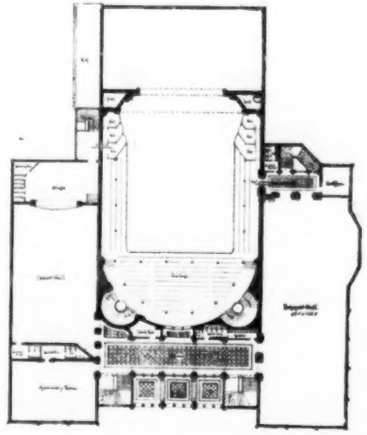
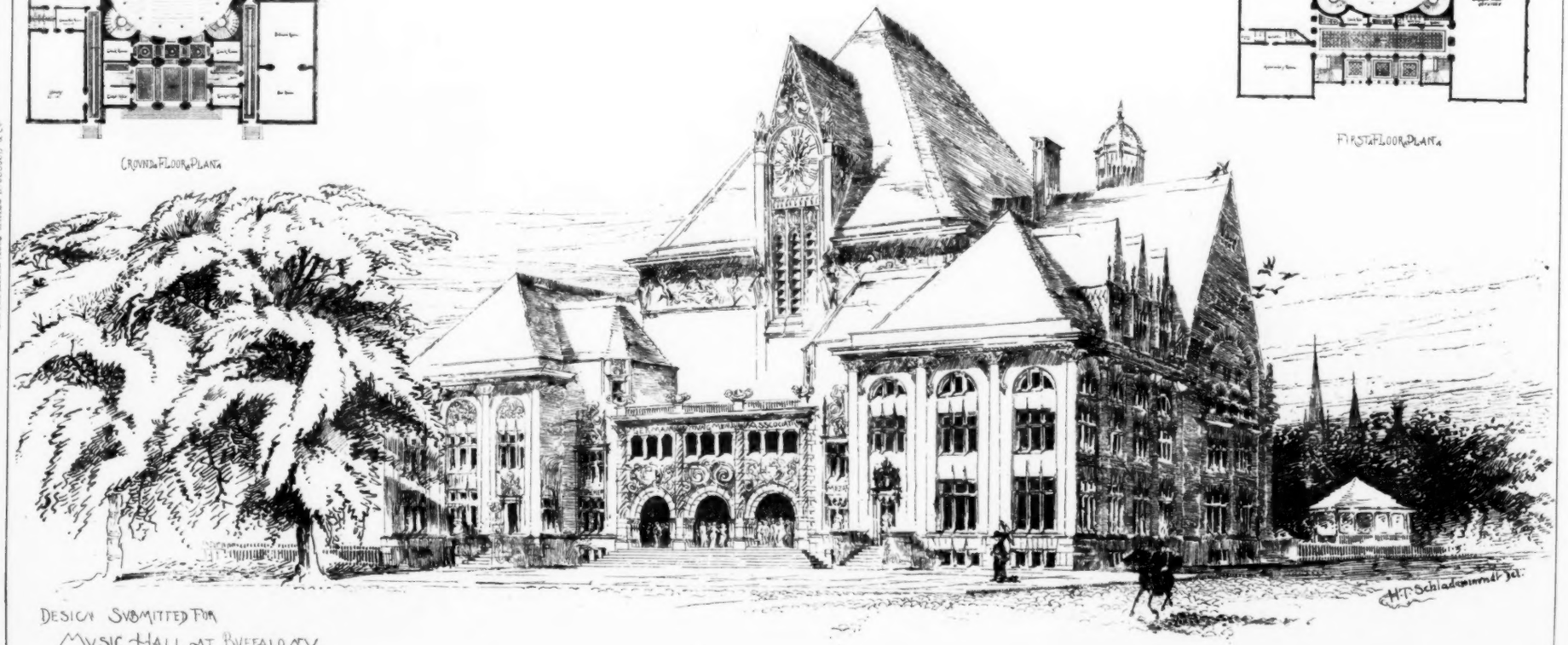


GROUND FLOOR PLAN.



FIRST FLOOR PLAN.



DESIGN SUBMITTED FOR
MUSIC HALL AT BUFFALO N.Y.
H.T. SCHLADERMUNDT. ARCHT.
268 West 23d St. New York.

HELIOTYPE PRINTING CO. BOSTON.

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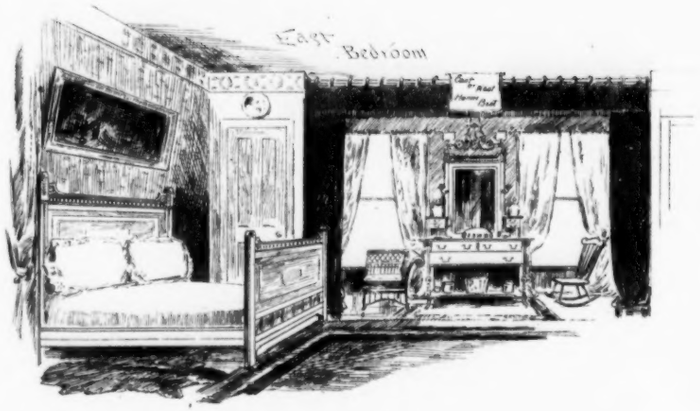
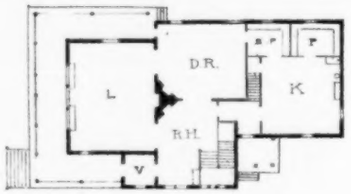
A Corner in the Library



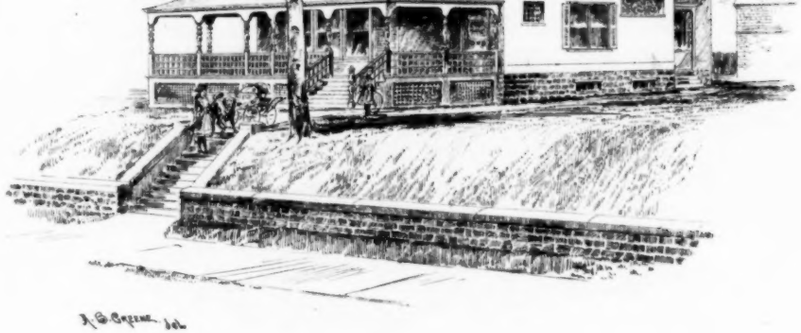
Master Bedroom

In the Dining Room

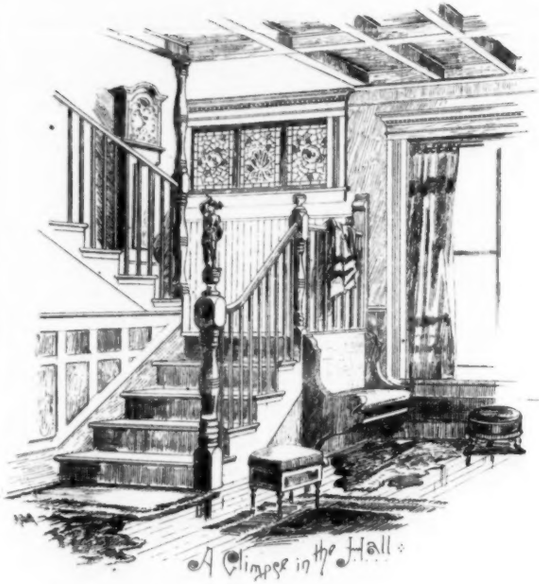


Residence of
M. Chas. E. Hasbrook
Kansas City, Mo.
A. Van Brunt,
Architect

In Vestibule.

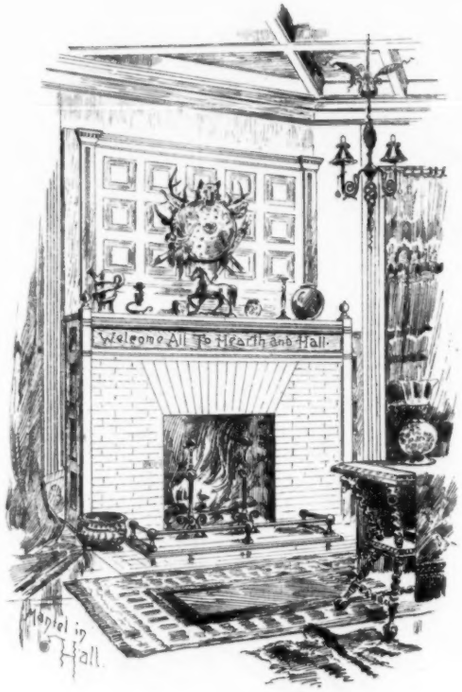


Vestibule Light.



A Glimpse in the Hall.

Library Mantel.



Mantel in Hall.

HELIOTYPE PRINTING CO. BOSTON.

produced was, that the smoke issuing from them blackened the top a greater distance down the chimney.

Mr. Carmichael says the chimney appears to be too large for one boiler. A coating of soot formed on the inside from three-fourths to one-and-one-half inches thick, and he draws this inference; that when a chimney is too wide, the heated air is expanded and cooled down, so as to have a sluggish motion favorable to the deposition of soot.

There was a violent storm of wind at Dundee, on Saturday, the 13th of February, 1864, which is taken notice of here, because it gave an opportunity of making some observations on the chimneys. At the height of the gale, which fortunately was between two and three o'clock in the afternoon, when most of the workpeople had gone home, the tops of both the chimneys, Nos. 1 and 2, were blown down at the same instant, making almost a simultaneous crash in falling, all the taper-top being carried away in both cases, without injury to the square shafts of the chimneys.

The gale was more violent than had been experienced for at least twenty years, as was evident from its blowing down the top of No. 2, which had stood from 1844, and also by the destruction of other chimneys and buildings in the district. Being present at the time, I was anxious so see how the chimneys behaved in such a violent storm, and this was seen to some extent by looking at No. 1 in line with the corner of a high mill, keeping the head steady. The movement was plainly visible; not a swaying motion like a tree bent by a blast, and recovering itself during the lull, but a steady rocking motion like the swing of a pendulum. The oscillation did not appear to exceed twelve inches, and the observations gave a feeling of security as to the stability of the chimney.

The tops of these chimneys were not rebuilt for some months, having to wait until the fires were out for a few days at the annual holidays. In rebuilding, the bricks were made to models in much heavier pieces than before and dovetailed together.

While the tops were off there was not much difference in the draught, the cross wall at top not being injured; but there was more dark smoke than before or after, and it did not rise so freely, but in a breeze of wind, fell down the leeward side, and clung more to the chimney.

When the tackle was up for getting to the top of No. 2 chimney, the opportunity was taken to make some observations on the heat of the escaping products, and also to see how much the outlet at the top could be contracted without injuring the draught.

With a view to this, the draught was tested for several days with the water-guage, and it showed fully .8, and at the same time the heat of flues was tested; at bottom of chimney 500° melted in one minute, 600° melted in longer or shorter time, depending upon the state of the fires.

Expecting that the temperature would be much lower at the top of the chimney, the operator was supplied with the alloys melting at 212°, 286° and 367°. These melted very quickly. Then 440° and 500° were tried, when both melted in a little more than two minutes; 600° would not melt, thus showing the temperature of the escaping products at the top of the chimney to be between 500° and 600°.

A sheet of iron was then put on the top of the chimney contracting the outlet two-and-three-fourths square feet. This was tried for two days, and did not affect sensibly either the draught or the temperature.

The outlet was then contracted still further by a larger sheet covering 5.48 square feet. This had a perceptible effect on the draught.

The experiments were not carried farther, there being considerable difficulty and some danger in following them up. By contracting the outlet with a proper taper instead of merely laying on a flat plate, the contraction might have been carried still farther.

DANGEROUS STRUCTURES.[1]

A Virland Farmhouse.

IN the consideration of this subject, it will be well, for its more thorough investigation, to divide it into four headings — viz.: natural decay, defective foundations, faulty construction of super-structure, and such buildings as are erected for temporary purposes. The causes affecting the stability of buildings may be taken under chemical agencies, removal of the subsoil water, mining and underground works, unequally yielding foundations, removal of lateral support, structural alterations, overloading, wind, fire, lightning, etc. Natural decay is that most common, as the continual action of the carbonic anhydride in the atmosphere, and the alternate contraction and expansion by frost and thaw, gradually but surely (though in differing degrees according to the nature or quality of the material), cause that continual waste which is going on over the whole surface of the land. Against this action the only remedy is renewal. Defective foundations bring many otherwise noble buildings into the dangerous class, and also the use of timber below ground, removal of the subsoil water in the construction of sewers, removal of props in mining, building upon the site of ancient and long-forgotten excavations, or upon an equally unyielding foundation, such as rock stepped out. In a rock foundation, unless extraordinary precautions are used in the selection of the materials, and in the elimination of all unequal settlement from a greater number of mortar joints in any one portion of the walling than in another on the same level, any great weight in the building would crush the wall between the two unyielding forces, which would not be the case if the foundation was of a partially yielding nature, such as stiff clay or gravel. Nothing leads to more disastrous results than the use of bad bricks and odd stones in the work below ground, for it should be remembered that the lower the portion of the wall the greater is the weight to be carried. In instances of defective foundations the superstructure must be supported by raking, flying, or needle shores, while the underpinning is carefully carried out. Chimneys, from their exposed position and height, compared with the size of the base, are constantly coming under the surveyor's wing; in dealing with this class of structures, including towers and spires, the vibration caused by the wind and ringing of bells must not be taken as a sign of weakness. Mr. Cowper has said he has known a large square chimney to move one-eighth inch at sixteen feet from the ground, and some chimneys would rock as much as four inches and yet be safe. Many successful attempts have been made to straighten chimneys the foundations of which had partly given way, and by the removal near the bottom of wedge-shaped portions from the side where no settlement had taken place, and by allowing the gravity of the mass in a lever-like fashion to pull over the opposite half to the perpendicular. At Bingly, near Bradford, a chimney over one hundred and fifty feet high was brought back four feet six inches to its original state by the above-mentioned means. Faulty construction is frequently met with, being the offspring of the excessive desire of society to obtain that which is impossible at the price, and thus foster the jerry-builder and the money-lender. In buildings of this kind walls are often composed of badly-burnt bricks containing much organic matter, and held together by little more than their own gravity, the mortar generally used as the adhesive material being poor in quality and scarce in substance; the timber used in the construction is often of a flimsy kind and insecurely fixed. Such buildings as these are continually coming under the official examination of the surveyor, through the action of most of the causes already mentioned, but more particularly through the removal of lateral support and fire. Buildings of greater importance than those above alluded to may be considered to come under this heading, more particularly erections with ashlar casing and rubble backing. The fall of the tower and spire of Chichester Cathedral, in February, 1871, and that of the chimney-shaft, two hundred and forty feet high, at the Newland Mills, Bradford, on December 28, 1882, may be cited as examples of disasters of this kind, while the judicious restoration of the Cathedrals of Hereford, Salisbury, and Peterborough, and the parish churches of Grosmont in Monmouthshire, St. Mary, Stafford, and many others, demonstrate to us the value of timely repairs in protecting these ancient monuments from impending ruin. Many of these works owe their security to the judicious use of iron bands and flying-buttresses.

In all this class of work not more than from four to five feet of wall should be removed at one time. Good, clean cement-concrete should be used if possible, carefully and quietly deposited in the trench and well rammed. The new and old work should be well pinned with slates and grouted with liquid cement. Cement possesses the invaluable property of expanding as it sets, consequently causing the new work to press against the underside of the old. The best ground lime concrete, mixed in the proportion of one to six, will expand as much as three-eighths of an inch to every foot in height, and will permanently retain the size. In the underpining of a large storehouse at Chatham Dockyard, in 1834, the upper portion of the concrete was forced into the vacant space and up to the bottom of the wall by the use of a framework fitted with screws.

Shores should be near the top of the wall to obtain as much leverage as possible. Fir is the best wood for shores, on account of the grain being generally straight, and it is usually kept in stock in long lengths. The length of flying-shores is limited to about thirty-three feet, as fir above that length cannot easily be obtained. The timber should be sound, and as square in section as possible, truly fitted at the joints, and the shore well made, as there is always some defection in the timber and the possibility of unforeseen defects. The action of the wind or the removal of some support may cause an excessive cross strain, which, unless especially provided for, may cause a serious derangement of the work. A special foundation should always be provided for shoring, and the angle at which the sole-piece is placed carefully adjusted, sufficient room being left for the work of rebuilding to be carried on. Care should be taken, in arranging the position of the shores, to well support the chimney-breasts, piers, corbels, and any portion of a structure having extra weight. Temporary structures require especial care in the construction, particularly

[1] By Sydney G. Gamble, Asso. M. Inst. C. E., Borough Surveyor, Grantham. A paper read before the Municipal and Sanitary Engineers and Surveyors' Association, and published in the *Building News*.

those used for the reception of large numbers of people, such as stands, hustings, shows, etc. The general tendency is to make this class of structures of the flimsiest kind, on account of the short time they are used, whereas nothing is more trying to the stability of an erection than a moving load of excited people, beating time with their feet or crushing forward.

The consideration of the opposing forces necessitates great care, in order that in all cases a sufficient resisting power may be obtained to counteract any pressure likely to be brought into play. The destructive effects of lightning have of late years been much reduced by the use of copper conductors; nevertheless instances have occurred within the last twelve months in the spires of Grantham and Sleaford churches. In the case of Grantham the actual damage done by the electric current was small; the spire being fitted with a small copper cord, but with a bad termination. It was decided to fix a solid tape conductor, and ladders were fixed for that purpose. Upon close examination, however, the top sixteen feet (two hundred and eighty-four feet from the ground) was found to be in a very dangerous state, not only by the shock it had sustained, but by reason of the decay of the mortar. Through the dilatoriness of the authorities it fell to the unfortunate lot of the author of this paper to serve a notice to remove the dangerous portion, which was attended to forthwith. At Sleaford the damage done was of a serious nature, a portion of the spire falling during Divine service; happily, no one was injured: the tower was damaged to such an extent that rebuilding of the tower and spire became necessary. Had a conductor been fixed, and the suggestions made in the report by Mr. Kirk, the architect, in 1852, been carried out, doubtless the tower would at the present moment have been standing in its original condition. The action of fire upon walls is usually of a very serious nature, causing many a fine stone building to come tumbling about the fireman's ears, and those having charge of the fire-brigades well know the effect of fire upon the igneous and limestone rocks, and the danger incurred by throwing water upon red-hot substances. The fumes from furnaces in which only coke is burnt have a great disintegrating effect upon brickwork, the author having in his possession a brick, taken from the top of a chimney, eaten away two and one-half inches out of the four and one-half inches in thickness.

DECORATION AND FURNISHING.[1]

I WOULD advise you, especially as I suppose I am expected to speak on this question from an artist's point of view, to select the most cheerful, light-giving colors, and combine them in perfect harmonies. Be sure that few things are more injurious to health—especially the health of the mind and the eyesight—than dark, heavy, inharmonious colors and combinations of strong opposites. The presence in your rooms of masses of black and white in juxtaposition, and such crude arrangements, are calculated to affect injuriously both the mental and physical eyesight.

Doctors will tell you how much people of weakened intellect are influenced by their surroundings of color; how the madness of a wildly excited lunatic is increased when left in a room with a red paper or red blinds, and how, if taken to a room the colors of which are blue, he will sink into comparative quiet. Another melancholy lunatic can be cheered and helped into a sounder frame of mind by living in red and yellow rooms.

Now, as we are told that we are all insane on some one point or another, it behooves us carefully to examine ourselves and discover if our madness be rampant, quiescent, or melancholy, and so arrange our immediate surroundings as best to meet our several cases.

The difficulty we must face and master is to discover just what those colors are which, while suiting our various temperaments, will keep their color, resisting outside influences. Now, taking it as a fact that in this climate we do suffer more from melancholy madness than from an exuberantly high-spirited one, because we are so short of pure, direct sunlight, we must do all in our power to supply that which is wanting. Our colors must simulate as nearly as possible the light and warmth we lack. That is to say, reds and yellows must form the staple colors for our walls, ceilings and floors. I do not argue that we must exclude blues and greens from our palette; no harmony is complete without its fair admixture of all the colors that Nature gives to us. You would lose the power of detecting reds and yellows if you used no other colors to compare them with.

In the decoration of a cornice the color scheme of which is red, I have employed several shades of green and of blue. You will observe the effect these light lines of green and blue have; they divide the reds and yellows, giving power and value to each in the composition. If I had employed one of the colors—the brown, green or red—of the paper, and tinted my cornice merely in shades of it, I should have formed a distinctive band of one overpowering color, too powerful and massive to harmonize with the well-balanced scheme of colors as shown in the paper. It would have become in the room the one object of striking importance, and would so have destroyed its harmony or restful repose, and would have been as much out of place with this many-colored paper as the rich cornice would have been in a whitewashed cellar.

In the decoration of a room great care should be taken that no color or object forces itself on the attention, except it be the one worthy object round which all interest centres. Even it must be modest. But the actual decoration, *i. e.*, the painting and papering, with which we are now dealing, being, as it were, the mantle covering the skeleton of the room, must form only the background against which all other objects stand, and it must be placed there with the kindest consideration for these objects.

Being, therefore, anxious that our walls shall not force themselves upon the attention, reminding us of the narrow boundary of our rooms, we must treat them in color, together with the ceiling, cornice and wood-work, just as Nature out of doors treats her landscapes. Her colors are pure, not half-tints, and so some people tell us ours ought not to be for indoor work, but they forget the important item, not present indoors, of atmosphere, the kind veil Nature draws over crudities; and they forget also this, that every color in a landscape is softened to the eye of an observer by its next-door neighbor; that from every inch of the mile of landscape he is examining, some different ray of color is darting to the retina of his eye, and so producing on his senses the effect of color we endeavor to imitate in these so-called half-tints. Fashion has done a great deal for us lately, and we see all the shops full of lovely colors. I only fear their mixing them to such an extent that we shall require some delicate instrument to detect one from another.

For a moment I will return to the colored cornice. When I painted this I put on my palette some white paint; three kinds of yellow, raw sienna, yellow ochre, and chrome yellow; two blues, indigo and Prussian; three reds, burnt sienna, Venetian red, and my one positive color, vermilion; three browns, raw umber, burnt umber, and Vandyke brown; and in each one of the tints shown in the arrangement there is some particle of every color on my palette, so having the effect of various rays of light upon each other.

This theory you should formulate into a rule, to guide you in the selection of the various items of furniture and decorative carpets, curtains, wall-papers and covering materials. It might be said with truth that a beautiful arrangement of color, calculated to give every satisfaction to the eye, and so pleasure to the mind, is as injurious to the constitution, if it be made of poisonous pigments not secured to the wall, but removable by friction or every draught of air, as if the color were a bad one. Just as it is said from the point of the colorist that, however wholesome the materials may be, and however well fastened on to their various surfaces so that they have no injurious effect upon the physical frame, they still, being of unsuitable and inharmonious color, have a prejudicial effect upon the health, acting through the eye and mind. It is necessary, therefore, to understand and give practical effect to both requirements.

In selecting papers, you must above all things assure yourself that they are free from arsenic or other poisonous substances; that the colors are not loaded-on so that they are readily removed by friction; or, if you elect rather to paint your walls, or even simply to distemper them, see that the colors are well mixed with a proper amount of glue size, new and sweet. Be particular to have the paint well mixed, so that it may be applied in thin coats, and not loaded in such a manner that the slightest friction will remove it. This injunction applies also to cornice and ceiling.

The wood-work must of necessity be painted in oil-colors, if it has not from the first been simply stained and varnished. I could wish very much that this practice were more common, if it were done with care and thought. Even amongst the commonest deals that are used in the construction of ordinary houses there is much room for choice. The door-panels, being picked from the most nicely pencilled and marked grain, will, when carefully stained to a good rich brown, reveal a delicate pattern, more beautiful than any stencil design you will be able to apply. I would avoid studiously those ugly yellows and imitations of mahogany one so often sees, and cling to good harmonious self-colors, trusting to the natural grain of the wood for relief.

Good hard-oak varnish on this stain, carefully and thinly applied in two or three coats, allowing ample time for setting between each, is, while more costly in point of labor, very little more so in material than if it be loaded on in thick, treacly masses, and, for service, infinitely more lasting. But if you must have the wood-work painted because it has been so before, put on the colors with the same care I advise for the varnishing. Two coats of properly-mixed color are better than six of badly incorporated oil, turpentine, dryers, and half-pulverized powder. When the paint is ready, or you think it is, for applying, test it by placing a little on the thumb-nail, and if you perceive, when rubbing the other nail over it, a gritty sensation, be sure the paint is not fit for use, and reject it. I do not say this simply because it will make you a bad and unpleasant surface, like sandpaper, when dry, but for this important reason, that all those bits of grit are so many particles of matter injurious to health, and in some cases actually poisonous. They are easily removed by friction, and so are liable to fly and lie about, to get on to the lungs or

[1] Extracts published in the *Artist* from the lecture delivered by Mr. G. F. Armytage, at Manches er, England.

into the pores of the skin. The paint, if properly mixed, should form a surface like the lacquer the Japanese cover their goods with.

Bear carefully in mind what I have said about choice of color. By preference, cover your ceilings with a slightly-patterned paper with a machine-glazed surface; it looks clean longer and keeps clean longer, the smooth surface rejecting particles of soot or dust.

Select a very quiet, small, geometrical pattern, and let the tint of it be in two shades of vellum. It is of course an excellent thing to paint the ceiling with four or five coats of paint in oil-color, as then it can be regularly washed; but this is an expensive piece of work. Paint the cornices, as I have shown you, in oil or distemper, and if you can manage it, and intend to remain in your house for eight or nine years, give your walls three or four good coats of oil paint, and stencil them all over in some neat, good pattern. This will provide you with many an evening's pleasant work when you have settled down, and when well done will be a lasting joy to you. Of course, if you must paper — for I do not much advise distempering the walls, being all one plain surface it shows at once every spot and mark, and it is not worth the labor of stencilling — there are now-a-days ample sources from which to select cheap papers good in design and color. Remember always to keep a harmony of color and design. Color is perhaps the first thing for you to grasp when thinking of the decoration of your houses; design must naturally follow on this, not precede it.

Now it is just possible some one may be inclined to laugh at all I have said, and attempt to point out that although there may be some sense in it, it is an absurd thing to press the desirability of such precautions being taken by workingmen, for I suppose by the title of this series of lectures that I have the pleasure of addressing such. I can understand as well as any that in the present condition of things, and the relation of landlord and tenant, there may be considerable difficulties to be overcome that may appear at first sight absolutely insurmountable. But all the difficulties and impossibilities you can arraign against me do not in the least affect the necessities of the case. If you would be healthy in your houses, and would have your children healthy, you must take these precautions.

We will suppose for an instant that you are in a comfortable position, and as sure as one can be of anything here below of good and regular work; you are naturally anxious to possess a place of your own, or to get one on a decent lease. Having done this, your duty is plain. Have you a greater respect for the doctor and the fever hospital than for your fellow artisans? To which do you prefer to pay the money? For it must be to one or the other. And which, I would ask you, is the better investment? In the one case you pay and have in exchange anxiety, pain, and very possibly the loss of some of your little ones to deplore, and no stock-in-trade left. In the other you pay, and for your money you have a bright, cheerful home, all freedom from anxiety of sickness from that cause at any rate, and a stock of paint and paper that will last you with ordinary care for four or five years. Just once a year, at cleaning time, you must spend a few shillings to scrape down and color-wash your ceilings and any parts of the work that are at all calculated to retain anything noxious.

And now respecting the furniture and other items necessary to make the house a home. For general principles: Do not overcrowd; do not have large, bulky things that are hard to move, that are too high to reach to the top of and dust, that take up too many cubic feet and inches of the precious air which in small rooms is a matter of great consideration.

Do not add to the day's toil a night of hard labor with a heavy cotton quilt or one of those heavy, old-fashioned bed-rugs. The clothes should be just eight inches or ten inches on each side of the bed wider than it is, but not more.

For the remainder of the furniture, if you will follow the rules I have already suggested as to its size and the wood it should be made from, I do not think there is anything further to suggest from the healthy point of view.

About the curtains and carpets there is a good deal of difference of opinion. Their presence in a room adds so infinitely to its comfort and pleasant appearance that one would be tempted to use them on the ground that what produces pleasure is as good for body as the mind.

Do not, of course, admit thick, clumsy materials in heavy folds that are difficult to push away from the windows and exclude light and air, or that hang on to the floor, and allow in their folds the secretion of dust and dirt.

You know the old-fashioned manner of draping windows; it had its uses long ago, before they knew how to hang windows, when it was necessary to provide an effectual screen from the draughts that would force their way through; they then hung over the upper part of the window, from a closely-fitted wooden cornice, a valance, behind which the curtain ran on a pole, but this valance was a tightly-fitted kind of apron and had its purpose to serve; not so the ridiculous substitute men put up now-a-days merely to imitate what had a meaning. The modern base imitation has no meaning or reason for its being. Let us therefore drape our windows with only so much material as will make them pretty and give a comfortable appearance when drawn at night, and for this it is not necessary that two or three feet should drabble on the floor. Many people tell us that on no account must we entirely cover floors with carpet. A margin must be stained two or three feet all round the room, and the carpet laid in a square in the centre, the margin being varnished. The idea of course is that the carpet, not being held down by heavy pieces of furniture, usually placed against the wall, can be more easily taken up and shaken, and the smooth varnished floor all round is so much more easily dusted or wiped over with a wet cloth; and all this is indisputable. But if these precautions are not taken (and my experience tells me that in the majority of cases they are not) this manner of covering the floor is no whit more wholesome than the all-over carpet. The times and seasons for the taking up of carpets and the scouring of floors are indelibly fixed in the minds of mortals, and new-fangled notions, if we can call them so, cannot overcome such prejudice. I am almost prepared to maintain that with the varnished margin there is the greater risk, unless it be cleaned oftener than the carpet. We are told that the germs of disease, flying in infinitely small particles in the dust, are taken on to the lungs and so fulfil their mission in us. You have noticed how quickly a cloud of dust is set in motion from a smooth surface, whereas a rough, porous material, as a carpet, will hold the particles. These particles of dust and germs of disease ought not to remain in the carpet, but if they must be somewhere, they are better there than on your lungs. Rather than say to you: "Cover your floors all over with carpet," I would say, "Whether you cover them all over or lay your carpets in squares in the centre of the floors, you must use the same precautions and prevent the accumulation of dust." These remarks concerning carpets and curtains will of course apply throughout houses. But I do not know what more to say than I have done concerning other articles of furniture, unless you will permit me to use again the argument I used when speaking of color, that those combinations which are subtle and true in their harmonies have a more healthy effect upon the mind than the heavy, unsuitable ones. So, I can conceive, the beautiful form that brings the imagination into play, and gives room for thought, must affect the physical health through the mental. Certainly couches and chairs that are comfortable and restful, so being really artistic by rightly fulfilling their destiny, are more conductive to good health than others designed without this consideration. Designers should think more of this and be less haunted with the desire to produce something novel, and remember that "Construction should be decorated, decoration should never be purposely constructed," and also "That which is beautiful is true; that which is true must be beautiful." And then our shop windows and houses will cease the display of tawdry, comfortless and useless rubbish with which they are filled to-day.

WHO SHOULD PUT UP THE CRESTING?

OSSIAN, IOWA, August 29, 1885.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs, — A difference of opinion has arisen between the owner and the contracting carpenter of a building with a French roof, deck of roof covered with tin, sides of roof covered with shingles. The owner has purchased a cast-iron cresting for enclosing the boundaries of deck roof, and thinks the carpenter should put it in place. The contract engages the carpenter to perform faithfully, etc., all work embraced in his department of work on the building. Now the dispute hinges on the question, whether it is the carpenter's part to put up the cresting, or whether it does not belong to the sheet-metal worker and tin-roofer? All hardware and sheet-metal and all tin-roofing work for the building is furnished and paid for by the owner. An answer, by letter or through the columns of the *American Architect,* will be thankfully received.

ELIAS G. AURAND.

[WE incline to the opinion that putting up a cresting should be considered a part of the contract of the metal-worker on any job, as the metal-worker and not the carpenter is to be held responsible for the tightness of the roof, and it is for his interest to see the work properly done by competent carpenters in his employ. Moreover, in this case as certain work is especially reserved by the owner for his own attention, the inference is that the carpenter can be held only for work specifically required by his contract and specification. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS.

CONSUMPTION OF WATER IN BROOKLYN, N. Y. — The daily consumption of water in Brooklyn is 45,000,000 gallons, an increase of from 7,000,000 to 10,000,000 gallons as compared with the same time last year, and some alarm is felt by the officials in view of the recent drought.

MINNESOTA'S LUMBER TRADE. — There was an increased output of lumber from Minneapolis during the last week, amounting to eighty cars, and a reduction of the output from St. Paul of forty-three cars. Trade is gradually creeping back to fall activity. It is expected that the proposed advance of $1 per 1,000 feet on several of the common grades, which goes into effect September 1, will result in many dealers making purchases this week. The dealers are not as confident of their ability to maintain the rise as they were after the May meeting, though it is fully warranted by the conditions of the stocks and prospective demand. The seven mills are being run steadily, but there is every indication that stocks of sawed lumber will not be in excess of stocks a year ago at the end of the season. Dimension is still scarce in this market and the advance will be more easily maintained on that than other classes. The local lumber market is especially good, and it is estimated that about 325,000,000 feet of lumber will be consumed this year in St. Paul and Minneapolis. This is more than will be made by the Minneapolis mills. — *New York Tribune.*

Crows and Cholera at Ratisbon. — In the ancient town of Ratisbon, Bavaria, there was much excitement during the early part of last month because the crows which abounded in the spires of the venerable cathedral disappeared as if by magic. A similar occurrence was noted in 1873, just before the appearance of the cholera, and hence the excitement.

Tests of the Siemens Gas-Burner. — The *Journal of Gas-Lighting* gives a description, by Mr. Frederick Siemens, of a new gas-lamp in which the main object has been to light only by means of indirect rays or diffused light. The following tests of this lamp have been made: The burners or jets removed from the domes were tested with the rays horizontal. The consumption of gas was 20 cubic feet per hour, and the illuminating power 57.5 candles, or 2.875 candles per cubic foot. They were then placed at an elevation of one foot six inches perpendicularly over a plane glass mirror placed at an angle of 45°, and in a line with the disk of the photometer. The distance from the standard light to the glass reflector was eighteen feet six inches, which, added to the one foot six inches that the burners were placed above the reflector, made together twenty feet, the distance at which the light to be tested has to be fixed from the standard light in the photometer employed. In this case the consumption was again twenty cubic feet per hour, and the illuminating power was found to be 55 candles, or 2.75 candles per cubic foot, so that it would appear that there was an absorption by the glass in reflection of 4.35 per cent.

The burners having been fixed in the dome reflector, the lamp thus arranged was again tested, as in the last experiment. The consumption of gas was 20.5 cubic feet per hour, and the illuminating power 62.5 candles, or an average of 3.048 candles per cubic foot of gas, or 3.180 candles per cubic foot if the 4.35 per cent found to be absorbed by the glass are added. The difference between 2.875 and 3.180 candles, or 0.305 candle per foot, gives the increase of light due to the use of the reflecting cone. After burning for some time the lamp was again tested. The consumption of gas was found to be reduced to 15.5 cubic feet per hour, and the illuminating power to be increased to 115 candles, being an average of 7.42 candles per cubic foot, or, allowing for loss by absorption, 7.74 candles per cubic foot. The difference between this and 3.180 candles, or 4.560 candles, gives the gain in light per cubic foot of gas due to the regenerative arrangement, the gas burning within a highly-heated atmosphere.

The Lessons of Naucratis. — The historical interest of Naucratis is very great; but its archæological interest, especially in all that relates to the ceramic arts, is greater still. Favored by its charter and constitution above other commercial cities of the Delta, Naucratis was not only the meeting-place and mart of all the seafaring traders of the Mediterranean basin, but it was also the headquarters of a local trade of the highest importance. Naucratis was a city of potters, and her wares, according to the testimony of Athenæus and others, enjoyed a great reputation. This being so, we are not surprised to learn that the mound of Nebireh is one vast Monte Testaccio — a hill of potsherds, deposited in strata as well defined and as strictly capable of chronological classification as the strata in a geological diagram. Mr. Petrie has trenched through and cleared away these strata, going sometimes to a depth of six feet below the hard mud at the bottom. Each layer has thus in turn rendered up its story, and the story of each layer proves to be a chapter in the history of Greek art. Now, for the first time, every link in the chain which connects the pottery of Greece with the pottery of Egypt is brought to light. That connection is not one of partnership, but of descent. We have long known that the early Greek, when gradually emerging from prehistoric barbarism, must have gone to school to the Delta and Valley of the Nile. The excavation of Naucratis not only confirms this view, but shows us the actual process of teaching on the part of the elder nation, and of learning on the part of the younger. To be convinced of this initial fact in the chronicle of Hellenic art, it is only necessary to visit the small collection of representative objects lately forwarded from Nebireh by Mr. Petrie, and still on exhibition in the First Bronze Room at the British Museum. We here see grouped together, much as they might elsewhere have been seen grouped together for sale or barter in the market-place of Naucratis, such wares as found purchasers among the people of both nationalities thereabouts — scarabs, amulets, and fantastic gods in colored and glazed pottery for Egyptians from the neighboring villages; figured and painted cups, bowls and vases, terra-cotta statuettes and the like, for Greek folk of the city, and for exportation to the trading ports of Asia Minor and the islands of the Ægean. These alabaster deities of old Nile, this quaint dwarf god in green faïence, whose native name was Bes — these pectoral ornaments and sacred emblems of the eyes of Horus, might have been sold by dealers from Tema-en-Hor, the "City of Horus" (modern Damanhur), and paid for with yonder archaic silver tetradrachmas, then fresh from the Athenian mint. Among those figured wares designed by local Milesian potters, we find the earliest example yet discovered of the pattern commonly known as "Greek honeysuckle." But, curious to relate, this ornament, as shown in its most archaic stage, turns out to be no honeysuckle at all, but a new and fanciful rendering of the time-honored Egyptian lotus-pattern, remodelled and transformed by the light hand and inventive genius of the alien artist.—*London Times, August* 5.

The El Fayoum Manuscripts. — It is said that the El Fayoum manuscripts belonging to the Archduke Renier of Vienna, when fully deciphered, will probably revolutionize ancient history. There are altogether 30,000 fragments in eleven different languages. Some of them date back 3,000 years, and the most modern bear the date 953 A. D. They are believed to have formed part of a great library. It is now possible to write the narrative of a thousand years of Egyptian history about which very little has heretofore been known, and of Roman history beginning 93 A. D., through the consecutive reigns of thirty-five Emperors, closing with Constantine the Great, from contemporary documents of every year of their reigns. They are destined to shed light upon some of the darkest periods of history, especially the time when the power of the Byzantine Emperors gradually lapsed into the hands of the Moslem conquerors, the reigns of the Ptolemies still farther back, and the period during which Egypt was under the sway of Persia.

Facts about the Winter Palace. — The Winter Palace, although constructed by the Empress Elizabeth, was not completed until Peter III ascended the throne, and the square in front of it was still covered with the shops and huts of the workmen. Heaps of stone, bricks, and rubbish obstructed the approaches to the palace. In order to clear the place Baron Korff, who then filled the post of Chief of Police at St. Petersburg, proposed to the Emperor to give permission to the poorer inhabitants to carry away these unused materials. The plan pleased the Emperor and orders were immediately given to carry it out. The Emperor witnessed from his windows the operation which was completed by the evening. The Emperor on installing himself in his new palace occupied the part looking onto the square and the corner of the Millionnafa. This portion of the palace bore the name of the King of Prussia's apartments. The occupation of the palace was accompanied by no extraordinary ceremony. The rooms occupied by Peter had been decorated by the architect Tchevakinsky, a pupil of Bastrelli, and the flooring and gilded cornices were brought from Italy. Peter's bedroom was in the extreme wing, and beside it was his library. Above the entrance door he caused a gallery to be constructed which he turned into his working cabinet and furnished at a cost of more than 3,500 rubles. The Empress Catherine occupied the rooms afterward known by the name of the Empress Marie Feodorovna. The day the Court occupied the Winter Palace (7th of April, 1762), was marked by the consecration of the palace church under the name of the Resurrection. Later on, in 1763, on the occasion of an ancient image of Christ being removed to the church, it was consecrated afresh by order of Catharine II as that of the Saviour. The embellishment of the interior and the furnishing of the palace were continued under Peter and only completed by Catherine. The total outlay up to the year 1768 was estimated at 2,622,020 rubles, or about £400,000. The principal director of the works in the interior was the celebrated amateur, Jean Betzky. In 1767 the annex of the palace destined to be the Hermitage was commenced, the architect Delamotte being entrusted with its execution. This building, oblong in shape, extended from the Millionnafa to the Quay. Four years later a second building was erected on a plan of the architect Felton. In 1780 several fresh wings were added, and the Empress ordered the architect Guaranghi to build a theatre which was at the latest to be completed by August, 1784. The same architect erected the arch connecting the Hermitage with the theatre and with the part of the palace containing the Raphael galleries. In 1786 the marble gallery (containing the Hall of St. George and the Throne room) was commenced, and in 1794 a superb throne was placed in the former. This throne was the masterpiece of the architect Starow. — *Exchange.*

Mr. Petrie on the Great Pyramid. — Mr. Petrie is minute in his observations of the injury that the King's Chamber, the chamber containing the sarcophagus in the Great Pyramid, has sustained, apparently by an earthquake. The joints of the stones have been loosened on every side, and the great beams of the ceiling, weighing about fifty-four tons each, have been broken right through on the south side, and the chamber actually holds together only by the force of sticking and thrusting; its eventual downfall is, as Mr. Petrie says, "a mere question of time and earthquakes." As one of these cracks and many of the joints have been daubed up with mortar, it seems that the injury must have occurred before the Pyramid was finished. The sarcophagus, in which great interest was centred by Professor Piazzi Smyth's theory, as it was supposed to exhibit a standard for all the Pyramid dimensions, is found by Mr. Petrie to be rather a careless piece of work. Marks of the saw which still remain show that the masons have more than once cut deeper than they intended, and have then tried to polish away their mistakes, but without wholly succeeding. The coffer was raised to see if there were any marks underneath it to indicate that it stood in its original place; but no such marks were found. Mr. Petrie gives some interesting details relative to the change that took place in the workmanship of the Pyramid in the course of building. The site was levelled with great care, and the base laid out with wonderful exactitude. The basalt pavement on the east side of the Pyramid and the limestone pavement on the other sides are splendid pieces of work, the blocks of basalt being all sawn and fitted together with the greatest accuracy. The lower part of the casing, of which Mr. Petrie for the first time uncovered some blocks *in situ*, is exquisitely wrought, and so is the Entrance Passage; "the means employed for casing and cementing the blocks of soft limestone, weighing a dozen to twenty tons each, with such hair-like joints, are almost inconceivable at present, and the accuracy of the levelling is marvellous." But the same excellence is not shown in the upper parts of the building; the upper part of the Great Gallery is much askew; in the ante-chamber, bad stone has been employed, and its defects rudely plastered over; and in the King's Chamber, though it is composed entirely of magnificent granite blocks of admirable workmanship, there is an error in the levelling, causing a difference of two and a quarter inches between the courses on the north-east and the south-west, an error which, if not due to natural causes, is surprising in such a piece of work as the Great Pyramid. In many places the stone has been left in the rough, to be dressed down when it was put in position, but which has been left undressed. Mr. Petrie suggests that the architect of the first period of the building died in the midst of his work, and was succeeded by one who exercised less careful supervision, and that thus the building was somewhat hastily finished. As the roofing-beams for the King's Chamber are all numbered, and marked for the north or south sides, Mr. Petrie thinks it probable that they were all hewn in the lifetime of the first architect, and fitted into position outside the Pyramid, but were built into their place by the second and less careful architect. — *Chambers's Journal.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

324,357. SAW.—Matthew Brown, Bridgeport, Conn.

324,368. HINGE FOR SCUTTLES, SKYLIGHTS, ETC.—Patrick Curley, Boston, Mass.

324,378. PIPE-WRENCH. — James T. Hayden, Boston, Mass.

324,384-385. SLIDING BLIND. — Nathan Jewett, Toledo, O.

324,395. ELLIPSOGRAPH.—Arthur Marichal, Philadelphia, Pa.

324,444. LOCK-HINGE.—Josef Wolf, Hoboken, N. J.

324,452. DOOR-CHECK. — Nathan O. Bond, Fairfax Court-House, Va.

324,456. PORTABLE BUILDING.—Thomas R. Carskadon, Keyser, W. Va.

324,460. SHUTTER-FASTENER. — William Delano, Brooklyn, N. Y.

324,492. GAS-TRAP COVER FOR WASH-BASINS. — Nathan Schwab, New York, N. Y.

324,493. ELEVATOR-CAGE AND SAFETY APPLIANCE.—Alonzo B. See, Brooklyn, N. Y.

324,499. GLAZING.—Thomas W. Taylor, Worcester, Mass.

324,500. PNEUMATIC ANNUNCIATOR. — William Thomas, Jersey City, N. J.

324,508. COMBINED AQUARIUM AND MARITIME THEATRE.—Jerome Wenmaekers, Antwerp, Belgium.

324,515. WATER-BACK.—Frank Armstrong, Bridgeport, Conn.

324,525. BARN-DOOR FASTENING.—Wm. L. Bliss, and George F. Kopp, South Egremont, Mass.

324,527. COMPOSITE METAL BAR.—Edwin S. Brainard, Manchester, Conn.

324,542. OVERFLOW AND DISCHARGE VALVE FOR BATHS.—John Demarest, New York, N. Y.

324,544. SAFETY-GATE FOR ELEVATORS. — George T. Fallis, St. Joseph, Mo.

324,555. BENCH-CLAMP.—Franklin P. Hish, Shelbyville, Ill.

324,634. CONSTRUCTION OF BUILDINGS.—James C. Anderson, Highland Park, Ill.

324,640. KNOB ATTACHMENT.—John Bellamy, Boston, Mass.

324,645. SEWER-TRAP.—Buckland P. Bower, Cleveland, O.

324,670. FIRE-ESCAPE.—William B. Doolittle, Chicago, Ill.

324,693. BLIND-SLAT HOLDER. — David Hinman, Southington, Conn.

324,695 CRANE. — Jos. Hollingsworth, Kilbourne, La.

324,710. FIREPLACE NICHE.—James N. Long, Philadelphia, Pa.

324,716. FIRE-PROOF CEILING. — Henry Maurer, New York, N. Y.

324,732. METALLIC DOOR-SILL.—Charles C. Schreiber, Cincinnati, O.

324,751. SAFETY DEVICE FOR ELEVATORS. — Robert M. Curtiss, Brooklyn, N. Y.

324,763. BORING-PIT OR AUGER. — Lucian M. Foster, Troy, N. Y.

324,768. TUBULAR SCREW. — Frederick R. Hunt, Leavenworth, Kans.

SUMMARY OF THE WEEK.

Baltimore.

BUILDING PERMITS. — Since our last report twenty-three permits have been granted, the more important of which are the following: —

J. M. Shackleford, three-st'y brick building, n e cor, Eden St. and Union Alley.

Henry Hartman, 2 three-st'y brick buildings, w s Pennsylvania Ave.; and 6 two-st'y brick buildings, e and w s Wilmer Alley, bet. Biddle and Greenwillow Sts.

C. A. Gambrill M'f'g Co., two-st'y brick buildings, 36′ x 38′, e s Commerce St., s of Pratt St.

Johns Hopkins University, four-st'y brick building, n s Monument St., bet. Eutaw and Garden Sts.

Swindell Bros., three-st'y brick building, 25′ x 120′, n e cor. Bayard and Warner Sts.

J. J. Gordon, three-st'y brick building, s e cor. Aisquith and Lanvale Sts.

E. T. Kirkley, greenhouse, s s Myers St., bet. Webster St. and Fourth Lane.

H. A. Zeigler, 3 two-st'y brick buildings, e s Valley St., s of Hoffman St.

Wm. Collett, 6 two-st'y brick buildings, w s Pennsylvania Ave., com. cor. Gold St.

Otto Goldback, 5 three-st'y brick buildings, e s Wolfe St., com. cor. McElderry St.

Chas. Callis, 10 two-st'y brick buildings (sq.) e s Broadway, bet. Preston St. and Carlisle Pl.

P. Fitzpatrick, 4 three-st'y brick buildings, e s Charles St., s of Jones Falls.

F. W. Koenig, three-st'y brick building, e s Hanover St., bet. Clement St. and Fort Ave.

Adam Wendell, 2 three-st'y brick buildings, n s Eager St., bet. Greenmount Ave. and McKim St.

Chas. Buck, three-st'y brick building, e s Pennsylvania Ave., bet. Hoffman and Dolphin Sts.

Boston.

BUILDING PERMITS.—*Wood.* — *Congress St.*, opp. A St., storage, 50′ x 100′; owner, Boston Wharf Co.; builder, N. S. Wilbur.

Milton St., near Byron St., dwell., 21′ x 30′; owner, Nathan Erskine; builder, C. W. Nickerson.

Garfield St., near Corey St., dwell., 31′ 2″ x 32′ 2″; owner, J. W. Bailey; builder, George A. Spear.

Dorchester Ave., No. 317, wagon-shed, 22′ 6″ x 74′; owner and builder, William Peard.

Savin St., near Blue Hill Ave., dwell., 20′ x 66′ 6″; owner, J. R. Murphy; builder, John Hayes.

Everett St., carriage-shed, 30′ x 40′; owner, G. C. Fitzpatrick; builder, Isaac G. Caswell.

Rutherford Ave., stable, 32′ x 34′; owner, D. Whiting & Son; builder, J. B. Wilson.

Medford St., opp. Walnut St., storage, 24′ x 90′; owners and builders, Holmes & Adams.

Harvard Ave., near Brighton Ave., stable, 24′ x 34′; owner, G. P. Brown; builders, Watson & Bowers.

Magnolia St., cor. Myrtle Pl., dwell., 24′ 6″ x 29′ 8″, owner, William T. Leggett; builder, Burke Bros.

Ruggles St., No. 32, storage, 28′ x 56′; owner, W. J. Bradlee; builder, A. J. Strout.

East Sixth St., No. 455, dwell., 15′ x 21′; owner and builder, James V. Devine.

Dudley St., near Dennis St., dwell., 22′ x 50′; owner, Charles Barton; builder, James Portmore.

Pleasant St., near South St., storage, 25′ x 50′; owner and builder, Boston Gas Light Co.

Vaughan Ave., near Geneva Ave., dwell., 17′ x 28′; owner, John Watson; builder, B. A. Noble.

H St., near East Fourth St., dwell., 21′ 6″ x 42′; owner, Dennis Reardon; builder, Lyman Locke.

H St., No. 102, dwell., 21′ x 36′; owner, Mrs. E. A. Johnston; builder, B. A. Noble.

Colden St., Nos. 24-26, dwell., 31′ 6″ x 58′ 8″; owner and builder, W. B. Quigley.

Brooklyn.

BUILDING PERMITS. — *Magnolia St.*, s s, 250′ e Irving Ave., three-st'y frame store and dwell., lined with hemlock boards, tin roof; cost, $3,500; owner, Wm. Carpenter; architect, Mr. Taylor; builder, W. H. Nichols.

Broome St., Nos. 31-37, 4 three-st'y and basement frame (brick-filled) tenements, gravel roof; cost, $14,000; owner, F. E. Mather, 213 East Eighteenth St., New York; architect, J. Doig, Jr.; builders, Doig & Post and P. Newman.

McKibben St., n s, 510′ e Bushwick Ave., one-st'y frame glass-house, gravel and shingle roof; cost, $8,500; owner, N. Dannenhoffer, Gerry St., cor. Throop Ave.; architect, Th. Engelhardt; builders, J. Wagner and E. Loerch.

Sixteenth St., s s, 73′ 10″ e Seventh Ave., 14 two-st'y frame (brick-filled) dwells., tin roofs; cost, each, $2,800; owner, architect and builder, R. Kirkman, 415½ Eighteenth St.

Halsey St., s s, 95′ e Sumner Ave., two-st'y brick dwell., tin roof; cost, $5,000; owner, G. R. Waldron, 529 Halsey St.; architect, A. Hill.

Russell Pl., w s, 85′ 9″ s Herkimer St., 6 two-st'y brick dwells., gravel roofs, wooden cornices; cost, $3,500; owners, Felix Gallagher and John Taafe, 136 Court St.; architect and contractor, Jno. Taaffe; mason, L. A. Brown.

Putnam Ave., n e cor. Tompkins Ave., four-st'y brick store and dwell., gravel roof; cost, $15,000; owner, Paul C. Grening, 420 Gates Ave.

Putnam Ave., n s, 24′ e Tompkins Ave., 9 two-and-a-half-st'y brown-stone dwells., e s, 81′ 6″ n Putnam Ave., two-and-a-half-st'y brown-stone dwells., all tin roofs; cost, each, $6,000; Paul C. Grening, 420 Gates Ave.

Fulton St., s s, 150′ e Rochester Ave., 5 three-st'y brick stores and flats, tin roofs; cost, each, $7,000; owner and contractor, J. W. Stewart, 373 Quincy St.; architect, I. D. Reynolds.

George St., s s, 100′ e Hamburg St., three-st'y frame (brick-filled) tenement, tin roof; cost, $4,200; owner and architect, A. Dillman, 87 Melrose St.; builder, H. Loeffler.

Boerum St., n s, 75′ w Lorimer St., three-st'y frame (brick-filled) tenement, tin roof; cost, $4,500; owner, J. Hillenbrand, on premises; architect, J. Platte; builders, J. Auer and J. Frisse.

Rutledge St., s s, 180′ w Harrison Ave., 2 three-st'y brick tenements, tin roofs; cost, each, $6,000; owner and mason, John Auer; architect, J. Platte; contractor, J. Bossert.

Central Ave., s e cor. Harman St., 2 three-st'y frame (brick-filled) stores and dwells., tin roofs; cost, each, $4,500; owners, architects and builders, Cozine & Gascoine, 109 Harman St.

Manhattan Ave., No. 142, e s, 270′ s Norman Ave., four-st'y brick store and dwell., tin roof; cost, $8,100; owner, George H. Kidd, 108 Franklin St.; architect, Th. Engelhardt; builders, J. Rooney and J. Fallon.

Adams St., e s, 75′ n Concord St., 3 five-st'y brick apartment-houses and stable, tin roofs; cost, $33,000; owner, E. D. Phelps, 55 Pineapple St.; architect, M. J. Morrill; builders, P. Carlin & Sons and Morris & Selover.

Quincy St., Nos. 285 *and* 287, n s, 400′ e Nostrand Ave., five-st'y brick and brown-stone tenement; cost, $45,000; owner, Mary Johnson, 289 Quincy St.; architect, A. Hill; builders, C. Viny and P. F. O'Brien.

Van Brunt St., w s, on river front, 2 five-st'y brick warehouses, gravel roofs; cost, $67,000; owners, New York Warehousing Co., 57 Broadway; architect and builder, Thomas Stone.

Bedford Ave., No. 370, w s, 225′ n Myrtle Ave., four-st'y frame tenement, tin roof; cost, $5,000; owner, architect and builder, A. McKnight.

Patchen Ave., n w cor. Madison St., three-st'y brick store and dwell., gravel roof; cost, $4,000; owner and contractor, J. P. Miller; architect, J. G. Glover; mason, not selected.

Jefferson St., s s, 20′ w Throop Ave., 4 two-and-a-half-st'y brick dwells., tin roofs; cost, each; $5,000; owners, architects and builders, Phillips & Weild, 573 Greene Ave.

ALTERATIONS. — *Fifth Ave., No.* 214, one-st'y brick extension, tin roof, iron cornice; cost, abt. $3,000; owner, John Devlin; architect, R. Boeklen.

South Fifth St., n e cor. Third St., altered for store and flats; cost, $4,200; owner, Thomas Husson, Jamaica; architect, E. F. Gaylor; builders, M. Smith and R. B. Ferguson.

Chicago.

BUILDING PERMITS. — A. Ruess, two-st'y dwell., 3815 Johnson Pl.; cost, $3,000.

A. McIntosh, 2 two-st'y dwells., 3112-3114 South Park Ave.; cost, $10,000; architects, Wheelock & Clay.

C. H. Kaufman, two-st'y flats, 752 California Ave.; cost, $2,500; architect, C. W. Boynton.

Mrs. M. Hinsdale, two-st'y dwell., 283 Leavitt St. cost, $3,500.

H. Hulvie, two-st'y flats, 351 Thirty-sixth St.; cost, $2,800.

W. S. Edbrooke, two-st'y livery stable, 966-968 Robey St.; cost, $5,000; architect, W. S. Edbrooke.

Geo. Spohr, two-st'y store and dwell., 799 Ellston Road; cost, $3,500; architect, E. Reichert.

C. P. Peterson, three-st'y dwell., 17 Wendell St.; cost, $4,600.

A. G. Sears, 2 two-st'y dwells., 33-37 Artesian Ave.; cost, $6,000; architects, Scott & Gage.

J. Cilian, three-st'y dwell., 198 Twentieth St.; cost, $3,800; architect, L. Novig.

T. Michelecky, three-st'y dwell., 447 Twentieth St.; cost, $4,600; architect, L. Novig.

J. Palt, three-st'y store and dwell., 3201 Laurel St.; cost, $6,400; architect, L. Novig.

W. Sheaf, three-st'y flats, 1030 West Harrison St.; cost, $4,500; architect, A. Bessler.

F. Albrecht, three-st'y dwell., 494 Jefferson St.; cost, $6,000; architect, J. Waska.

A. L. Crocker, four-st'y flats, 282 Indiana St.; cost, $5,000.

J. Weimand, two-st'y flats, 87 Jay St.; cost, $2,500; architect, E. Devine.

J. Voltz, four-st'y store and flats; cost, $10,000; architect, C. H. Gottig.

S. Anderson, two-st y dwell., 515 Lasalle St.; cost, $10,000; architect, A. Cudell.

J. Long, two-st'y store and dwell., 877 Thirty-first St.; cost, $6,000; architect, P. Ruehl.

Mrs. J. Schuler, three-st'y dwell., 447 Sedgwick St.; cost, $4,500; architect, G. S. Spohr.

Mrs. Baumgarten, two-st'y dwell., 461 Congress St.; cost, $3,000.

G. L. Brown, three-st'y store and dwell., 124-126 Thirty-fifth St.; cost, $11,000; architect, L. B. Dixon.

D. J. Wren, 10 cottages, Coblentz St.; cost, $10,000.

D. J. Wren, 5 cottages, Coblentz St.; cost, $5,000.

M. Gallagher, 2 two-st'y flats, 2493-2495 Cottage Grove Ave.; cost, $7,000.

E. L. Thain, 2 two-st'y dwells., 3152-3154 Prairie Ave.; cost, $10,000; architect, E. L. Thain.

G. L. Lombard, 2 two-st'y dwells., 911-913 Kedzie Ave.; cost, $5,500.

S. J. Wakeman, three-st'y dwell., 1050 West Washington St.; cost, $4,000; architect, J. Speyer.

J. H. Bentz, two-st'y flats, 352 Congress St.; cost, $4,000.

C. Nagel, two-st'y dwell., 117 Seminary Ave.; cost, $4,000; architect, J. Schnoor.

B. Quigley, three-st'y store and flats, 444 West Twelfth St.; cost, $6,000; architect, C. McAfee.

A. Williams, 2 two-st'y dwells., 292-294 Idaho St.; cost, $6,000; architect, A. Williams.

J. Waldhauser, four-st'y stores and flats, 186 North Clark St.; cost, $9,000; architect, E. Baumann.

H. Reymer, two-st'y store and dwell., 653 North Paulina St.; cost, $3,500.

S. W. Rawson, 5 cottages; cost, $4,500.

W. L. Burnham, two-st'y dwell., 456 Orchard St.; cost, $3,000; architects, Burnham & Root.

D. T. Jack, two-st'y flats, 294 Park Ave.; cost, $2,500.

W. Fallows, 3 three-st'y flats, 347-351 Washington Boulevard; cost, $30,000; architect, E. E. Snider.

Mrs. Williams, two-st'y flats, 1056 West Park St.; cost, $2,800.

J. Scannell, two-st'y flats, 722 Hinman St.; cost, $2,800.

H. S. Fitch, two-st'y barn, Michigan Ave.; cost, $3,500.

B. F. Nourse, two-st'y dwell., 3649 Grand Boulevard; cost, $6,000; architects, Wheelock & Clay.

C. Nelson, three-st'y flats, 390 Erie St.; cost, $4,000.

W. Bussell, two-st'y flats, 972-974 Walnut St.; cost, $3,000; architect, G. Isaacson.

Kansas City, Mo.

MILL. — Plans have been completed for the construction of a linseed oil mill in the east bottoms. The building will be a story brick. It is being built by Mr. James Johnson, a St. Louis capitalist.

SHOT-TOWER.—Mr. F. C. Ripley, of Dubuque, Ia., and Mr. Hugh Merril of Cincinnati are preparing to establish a shot-tower in this city.

BUILDING PERMITS. — Bebney & Everett, brick business block, 13-23 East Eleventh St.; cost, $15,000.

Philip Smith, brick block, cor. Fourth and Cherry Sts.; cost, $15,000.

S. Z. Shutte, brick business house, 1207 and 1209 Grand Ave.; cost, $35,000.

W. A. Halbert, brick house on Broadway; cost, $5,000.

Mrs. C. E. Bramwell, block, 720 Troost Ave.; cost, $9,000.

L. A. Willard, business block, 901 Broadway; cost, $18,000.

V. Hansauld, frame block, Terrace St.; cost, $4,500.

J. T. Eagers, brick house, cor. Fourteenth and Tracy Sts.; cost, $5,000.

Ernest Stoltze, business block, 1415 Grand Ave.; cost, $5,000.

D. S. Long, brick business block, 1413 Grand Ave.; cost, $5,000.

W. C. Tabb, brick house, Charlotte St.; cost, $4,000.

W. H. Chick, brick house, cor. Eleventh and Brooklyn Aves.; cost, $10,000.

Minneapolis, Minn.

BUILDING PERMITS. — E. D. Jackson, two-st'y wood dwells., s s Linden Ave., bet. Sixteenth and Seventeenth Sts., n; cost, $3,000.

C. W. Lasher, alteration store-building, n e cor. Tenth Ave. and East Third St., s; cost, $3,400.

C. H. Smith, two-st'y wood dwell., s s East Nineteenth St., bet. Park and Portland Aves.; cost, $3,000.

J. C. Hallitt, three-st'y brick veneer store and flat, n e cor. Western Ave. and Ninth St.; cost, $8,000.

Swedish Mission Church Society, add. brick veneer church, n w cor. Twelfth Ave. and East Seventh St.; cost, $4,000.

S. C. Gregory, two-st'y wood dwell., Second Ave., bet. East Twenty-eighth and East Twenty-ninth Sts.; cost, $3,000.

Kenyon & Best, six-st'y brick store-building, 604 Nicollet Ave.; cost, $75,000.

New Haven.

Building Permits. — Following are the permits for new buildings issued since last report: —

Congress Ave., near Kossuth St., two-st'y frame dwell., 39′ x 53′; cost, $3,000; owner, John Hegel.

College St., cor. Wall St., three-st'y stone society building, 36′ x 44′; cost, $20,000; owners, Chatfield & Grant; architect, Harrison W. Lindsley.

Putnam St., near Howard Ave., three-st'y frame dwell., 2 tenements, 21′ x 44′; cost, $3,000; owner, R. V. Lyon; architect, C. H. Stilson.

Railroad Ave., near Grand St., three-st'y packing-house, 73′ x 82′; cost, $5,000; owners, S. E. Merwin & Son.

Olive St., near Green St., two-st'y brick dwell., 27′ x 48′; cost, $5,000; owner, John R. Ruff; architect, C. H. Stilson.

Meadow St., Nos. 188-198, four-st'y brick and stone building, 4 stores and 12 flats, tin roof, 60′ x 80′; cost, $30,000; owner, J. B. Flagg; architect, David R. Brown.

North Ave., two-st'y frame dwell., 26′ x 37′; owner, F. Hartog; architect, C. H. Stilson.

Meadow St., Nos. 182, 184 *and* 186, four-st'y brick and stone building, 2 stores and 6 flats, tin roof, 41′ x 61′; cost, $12,000; owner, Charles N. Flagg; architect, David R. Brown.

Humphrey St., cor. Wallace St., two-st'y brick building, tin roof, 22′ x 40′; cost, $4,000; owner, Lawrence J. Coffey.

Munson St., 4 two-st'y frame dwells., 22′ 6″ x 38′; cost, $6,000; owner, E. L. Goodale.

New York.

Business in the building interests is very quiet, the monthly meeting of the Mechanics and Traders Exchange was not convened this week owing to the absence of a quorum.

Hotel Addition.—The "Buckingham" on the n e cor. Fifth Ave. and Forty-ninth St., is to have an addition built at a cost of $200,000; Messrs. C. Graham & Sons, builders.

Houses.—On the w s of New Ave., running from One Hundred and Twenty-second to One Hundred and Twenty-third Sts., 20 dwells. on ground, 75′ x 201′ 10″ are to be built by Messrs. J. W. & A. Teets.

On the s e cor. One Hundred and Fourth St. and Manhattan Ave., 3 houses are to be built by Mr. Alex. Roux, at a cost of $45,000; from plans of Mr. R. S. Townsend.

Building Permits.—*Fourth Ave.*, e s, 70′ s One Hundred and Eighth St., four-st'y brick storage building, tin roof; cost, $6,000; owner, Edward Morrissey, 236 East Twenty-seventh St.; architects, Cleverdon & Putzel.

East One Hundred and Twelfth St., No. 332, four-st'y brick tenement, tin roof, cost, $7,600; owner, Ratje Bunke, 319 East One Hundred and Eleventh St.; architect, H. H. Cording.

One Hundred and Thirty-first St., n s, 375′ w Sixth Ave., 3 three-st'y brick (stone front) dwells., tin roofs; cost, each, $9,000; owner, S. J. Wright, 201 West One Hundred and Thirty-first St.; architects, Cleverdon & Putzel.

One Hundred and Thirty-fourth St., n s, 75′ w Eighth Ave., 3 four-st'y brick tenements, tin roofs; cost, each, $15,000; owner, Walter S. Price, 232 West One Hundred and Thirty-second St.; architect, G. Robinson, Jr.

Seventh Ave., e s, 24′ 11′ s One Hundred and Thirty-fifth St., 3 three-st'y brick (stone front) dwells., tin roofs; cost, $27,000; owner, A. M. Tompkins, 2376 Second Ave.; architect, Andrew Spence.

Washington Ave., e s, 217′ s One Hundred and Sixty-eighth St., two-st'y frame and brick dwell., cost, $3,500; owner, G. W. Bashford, 79 Cedar St., att'y for Wm. Rhinelander; architect, W. W. Gardiner; builder, John Knox.

Alterations. — *Washington Alley*, n s, abt. 50′ w University Pl., on rear of Nos. 46 and 48 Clinton Pl., raised 18′; also one-st'y brick extension, tin roofs; also front and internal alterations; cost, $6,000; lessee, Edward Cooper, 12 North Washington Sq.; architect, R. Berger.

Third Ave., No. 2360, three-st'y brick extension, tin roof; cost, $4,000; owner, J. Q. Bourne, on premises; architect, J. Munckwitz.

Tompkins St., No. 43, four-st'y brick extension, tin roof, etc.; cost, $3,800; owner, Richard Hodge, 343 Rivington St.; architect, J. Munckwitz; builders, W. Nolan and W. McDevitt.

Fiftieth St., n s, abt. 197′ e Seventh Ave., raised one-st'y; cost, $5,000; owners, Broadway & Seventh Ave. R. R. Co.; architect, S. D. Hatch; builders, R. L. Darragh & Co. and J. Elgar.

East Thirty-sixth St., No. 13, two-st'y brick extension; cost, $5,000; owner, Henry C. Valentine, on premises; architect, E. E. Raht; builders, D. Campbell and Germond & Co.

Fifth Ave., n e cor. Forty-third St., internal alteration; cost, $3,000; owner, Temple Emanuel; architect, W. H. Hume; builders, I. A. Hopper and J. Elgar.

West Thirty-ninth St., No. 205, five-st'y brick extension; cost, $60,000; owner, St. Vincent de Paul Orphan Asylum, on premises; architect, W. H. Hume.

West Forty third St., Nos. 542 *and* 544, three-st'y brick extension for stable; cost, $3,000; owner, Thos. J. King, on premises; architect, W. F. Simonds.

Fifth Ave., No. 421, two-st'y brick extension, tin roof; cost, abt. $8,000; owner, Catherine M. Van Auken, on premises; architect, G. B. Post.

Philadelphia.

Building Permits.—*Dupont St.*, e Ridge Ave., two-st'y dwell., 16′ x 42′; H. Lovering, owner.

Ridge Ave., cor. Johnson St., 4 two-st'y dwells., 12′ 6″ x 30′; J. C. Hains, contractor.

Vienna St., s e cor. Memphis St., stone basement to church, 60′ x 113′; Thos. McCarty.

Twenty-seventh St., n Columbia Ave., two-st'y brick stable; O. McKenna, owner.

Viola St., n Fairmount Ave., 2 two-st'y dwells., 12′ 6″ x 26′; J. F. Wimser, contractor.

Mascher St., n Norris St., two-st'y dwell., 16′ x 30′; B. Jacobs, owner.

Tucker St., n Memphis St., two-st'y stable, 16′ x 34′; F. R. Clark, owner.

Queen St., n Township Line, two-st'y stable, 18′ x 30′; C. E. Bartle, contractor.

Arch St., No. 1303, two-st'y back building, 14′ x 36′; Kester & Oram, contractors.

Vankirk St., n Jackson St., two-st'y dwell., 16′ x 33′; T. B. Long, owner.

Twenty-seventh St., n Dauphin St., three-st'y dwell., 19′ x 30′; Aug. Schriber, contractor.

Frankford Ave., cor. Emerald St., two-st'y dwell., 16′ x 48′; C. H. Maisland, contractor.

Otsego St., No. 1814, two-st'y stable, 16′ x 35′; Peter Stuebling, contractor.

Forty-ninth St., s Chestnut St., 7 two-st'y dwells., 14′ x 28′; W. Bunch, contractor.

Fifteenth St., s Dauphin St., 2 two-st'y dwells., 17′ x 55′; C. C. Moore, contractor.

Eleventh Ave., n e cor. Lehigh Ave., addition, 16′ x 36′; Chas. Stirling, Jr., contractor.

Warren St., w Fortieth St., 3 two-st'y dwells., 11′ x 40′; Geo. Heiser, contractor.

Garibaldi St., w Tenth St., two-st'y stable, 20′ 6″ x 73′ 4″; F. Shillinger, contractor.

Bainbridge St., w Eighteenth St., 6 two-st'y dwells.; Jos. Bird, contractor.

South Second St., No. 1517, 3 two-st'y dwells.; Dunbar & Myers, contractors.

Second St., n Diamond St., 6 three-st'y dwells.; Alexander J. Richards, contractor.

Lambert St., n Diamond St., two-st'y dwell., 15′ x 45′; J. Richtly, contractor.

North Third St., No. 1128, two-st'y dwell., 18′ x 69′; Jno. Klebe, contractor.

St. Louis.

Building Permits. — Eighty permits have been issued since our last report, twelve of which are for unimportant frame houses. Of the rest, those worth $2,500 and over are as follows:—

A. Mansur, two-st'y brick dwell.; cost, $25,000; Peabody & Stearns, architects; J. D. Fitzgibbons, contractor.

C. H. Blankmuster, two-st'y brick dwell.; cost, $3,000; Chas. May, architect; L. Yaeger, contractor.

H. Woeltge, two-st'y brick tenement; cost, $5,000; L. Yaeger, contractor.

Chas. Schroeder, two-st'y brick dwell.; cost, $3,300; Whri, architect; Wm. Riewe, contractor.

E. O. Standard, two-st'y brick dwell.; cost, $7,000; A. Beinke & Co., architects; sub-let.

John Padberg, two-st'y brick dwell.; cost, $3,000; J. R. Bolfes, contractor.

J. B. Powell, 2 adjacent two-st'y brick dwells.; cost, $5,800; Fred. Hoffermann, contractor.

F. Heimenz, one-and-one-half-st'y brick dwell.; cost, $2,750; Jos. Handen, contractor.

F. W. Meier, two-st'y brick dwell. and stable; cost, $2,900; Henry W. Rocklage, contractor.

Robert Kreplin, two-st'y brick store and dwell.; cost, $2,600; A. Beinke & Co., architects; L. Yaeger, contractor.

St. Louis Illuminating Co., one-st'y Electric Works; cost, $5,000; Taylor, architect; Kirgin & Bro., contractors.

D. C. O'Shea, 2 adjacent two-st'y brick tenements; cost, $3,000; T. Murphy, contractor.

St. Peters Episcopal Church, one-st'y brick addition; cost, $6,800; Gravel & Co., architects; R. P. McClure, contractors.

Wm. C. Lange two-st'y brick dwell.; cost, $3,500; A. C. Janssen, architect; C. Linnen Kohl & Co., contractors.

Oliver Von Schrader, four-st'y brick store; cost, $8,000; I. Taylor, architect; F. C. Bonsack, contractor.

Wm. Brenneke, 3 adjacent two-st'y brick tenements; cost, $4,000; O. Doemer & Bro., contractors.

Mr. De Jeannette, 3 adjacent two-st'y brick tenements; cost, $3,700; C. C. Helmers, architect; John R. Davis, contractor.

Mary J. Switzer, four-st'y brick store; cost, $13,000; E. Mortimer, architect; D. Evans, contractor.

Henry Bodicaker, 2 adjacent two-st'y brick tenements; cost, $3,500; J. Goesse, architect; Bothe & Ratemann, contractors.

Frost & Clemence, two-st'y brick stable; cost, $4,000; J. Johnson, architect; J. A. Stanton, contractor.

W. L. C. Bray, two-st'y brick dwell.; cost, $3,600; Thos. J. Furlong, architect; James H. Keefe, contractor.

Mrs. Nora Murphy, two-st'y brick dwell.; cost, $2,700; J. B. Lindsley & Son, contractors.

John Dorrer, two-st'y brick dwell.; cost, $4,500; Thomas Roach, contractor.

Z. Berry, two-st'y brick dwell.; cost, $3,700; E. D. Ogden, contractor.

Patrick Shea, two-st'y brick dwell.; cost, $3,300; J. J. Wharton, contractor.

G. H. Timmermann, four-st'y brick store; cost, $15,000; Klute & Hildebrandt, contractors.

John Callaghan, 2 adjacent two-st'y brick dwells.; cost, $3,000; F. H. Goss, contractor.

F. Müeller, 2 adjacent two-st'y brick dwells.; cost, $4,300; F. Müeller, contractor.

J. J. Ledus, two-st'y brick dwell.; cost, $6,500, Grable & Co., architects; B. F. Stotlemeyer, contractor.

St. Paul.

Building Permits.—Four-st'y brick business block, w s Robert St., bet. Sixth and Seventh Sts.; cost, $19,000; owners, St. Paul Real Estate and Improvement Co.

Two-st'y brick veneer dwell., s s Grant St., bet. University and Aurora Ave.; cost, $6,000; owner, Lewis L. May.

Alteration five-st'y brick army offices, e s Robert St., bet. Second and Third Sts.; cost, $10,000; owner, U. S. Government.

Three-st'y brick stores and dwells., s s Dakota Ave., bet. Chicago and Indiana Aves.; cost, $14,000; owner, C. F. Meyer.

Brick church, s w s Sixth St., bet. Franklin and Exchange Sts.; cost, $35,000; address, Rev. A. J. D. Haupt.

Two-st'y frame dwell., w s Wilkin St., bet. McBoal and Mississippi River; cost, $4,000; owner, C. E. D. Olmstead.

Two-st'y brick veneer dwell., n w s Summit Ave., bet. Selby and Nina Aves.; cost, $10,000; owner, J. S. Robertson.

Two-st'y frame dwell., n s Pleasant Ave., bet. Third and Ramsey Sts.; cost, $4,000; owner, Mrs. E. S. Hall.

Bids and Contracts.

Dover, N. H. — The Dover Improvement Association have awarded the contract for building the new shoe factory to Hiram F. Snow, for $21,800.

Washington, D. C.—The following is an abstract of the bids for iron-work of library of State, War and Navy Building: —

Builders' Iron Foundry, Providence, R. I., $43,250.

Snead & Co. Iron Works, Louisville, Ky. (*accepted*), $26,840.

Jackson Architectural Iron Works, New York City, $46,750.

Phœnix Iron Company, Trenton, N. J., $49,000.

Hecla Bronze & Iron Company, Brooklyn, N. Y., $45,650.

Manly & Cooper Manufacturing Company, Philadelphia, Pa., $54,321.

Bids were opened at Colonel Casey's office for the erection of a fire-proof building for the Army Medical Museum. The following were the bidders and total amounts bid, including those for heating apparatus: —

D. C. Weeks & Son, New York, $233,637.

Frank Baldwin, Washington, $185,490.

Bright & Humphrey, Washington, $179,987.

August Getz & Co., Washington, $194,000.

M. A. McGowan, Washington, $182,540.17.

C. A. Schneider & Sons, Washington, $198,405.33.

D. J. McCartney & Co., Washington, $200,595.

J. F. McDermott, Washington, $191,600.

COMPETITION.

Memorial to General Grant.

We offer three prizes of $50 each for the best three "preliminary sketches" of a design for a Memorial to General Grant, to be erected in a large town at a cost not exceeding $100,000.

Conditions: — Drawings to be received at this office **on or before Saturday, September 19, 1885.** Drawings to be at any scale in pencil or ink — no brush-work or color — the scale to be indicated on the drawing. A brief memorandum of material and probable cost to appear *on the drawing itself.*

Each design to be represented by perspective (or elevation) with plan, and, if necessary, section at smaller scale.

Each design to be signed by a motto, and the author's name forwarded under seal. In case of publication, the author's name will be announced, unless request is made to the contrary. The award will be made by a jury of architects and sculptors.

509 EDITORS OF THE "*American Architect.*"

PROPOSALS.

School-House Addition.

[**At Corryville, O.**]

Sealed proposals will be received at the office of the Board of Education, Public Library Building, until **12 o'clock, noon, Monday, September 14th, 1885,** for labor and material required for building a (3) room addition to the Twenty-third District School, Corryville, according to plans and specifications on file at the office Superintendent School Building, No. 287 West Ninth St., Cincinnati, O.

Bids must be upon blank forms, to be obtained at either office.

Each bid must contain the name of every person interested therein, and must be accompanied by a sufficient guarantee of some disinterested person in a penalty equal to the amount of the bid; that if the bid is accepted, a contract will be entered into, and the performance of it properly secured.

All bids must be addressed to George O. Deckebach, Chairman Building Committee, and plainly marked bid for Twenty-third District Improvement.

The right is reserved by the Board to reject any or all bids.

By order of the Board of Education.

506 ROBT. G. STEVENSON, Clerk.

Steam-Heating.

[**At Leavenworth, Kans.**]

The National Home for Disabled Volunteer Soldiers,
Leavenworth, Kans., August 26, 1885.

Sealed proposals will be received at the Planters House in this city, **until 12 o'clock, noon, Saturday, September 26, 1885,** for furnishing all material (except the boilers, which are to be furnished and delivered at the boiler-house), and setting the boilers in place, complete the steam-fitting, the steam-heating, the gas-fitting, the plumbing, and the sewer-pipes and connections required in the buildings, now being erected at the Home.

The bids must be made separately for each branch of the work, in a lump sum for each, but may be bid for also in a lump sum for the entire work.

Plans and specifications may be seen at the office of Carr & Grodavent, architects, Leavenworth, Kans.

The right is reserved to reject any or all bids.

GEN. W. B. FRANKLIN, President.

E. F. Brown, Inspector-General. 508

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New Advertisements.

BROOKS, SHOOBRIDGE & CO. (New York, N. Y.), Cement. Page xviii.
J. B. SHANNON & SONS (Philadelphia, Pa.), Brass-work. Page 3, Supplement.
E. C. COOPER & CO. (Philadelphia, Pa.), Iron-work. Page xv.
L. W. SEAVEY (New York, N. Y.), Scenery. Page xx.
HENRY HUBER & CO. (New York, N. Y.), Water-Closets. Page xvii.
W. L. DOLBEARE (Boston, Mass.), Floors (water-tight). Page 2, Supplement.
EXCELSIOR BRICK AND STONE CO. (Philadelphia, Pa.), Bricks (enamelled). Page xi.
A. H. DODD (Hudson, N. Y.), Window Blind Worker. Page iii.
THOMAS MADDOCK & SONS (New York, N. Y.), Water-Closet. Page xvi.
STANLEY CORRUGATED FIRE-PROOF LATHING CO. (New York, N. Y.), Wire Lathing. Page xi.

Dissolution of Partnership.

The Copartnership heretofore existing under the name of **JAMES R. OSGOOD & CO.**, is hereby dissolved.

JAMES R. OSGOOD,
EDWARD L. OSGOOD,
BENJAMIN H. TICKNOR,
THOMAS B. TICKNOR.

Boston, July 18, 1885.

Copartnership Notice.

The subscribers have formed a Copartnership under the name of **TICKNOR & COMPANY**, for the purpose of continuing the business of Publishing and Book-selling, heretofore carried on by **JAMES R. OSGOOD & CO.**

BENJAMIN H. TICKNOR.
THOMAS B. TICKNOR.
GEORGE F. GODFREY.

Boston, July 18, 1885.

PROPOSALS.

TOWN-HALL. [At Newport, N. H.]

NEWPORT, N. H., August 31, 1885.

Sealed proposals will be received **until Saturday, September 12, 1885, at 12 o'clock, M.**, for rebuilding Court-House and Town-Hall in Newport, N. H., in accordance with plans and specifications prepared by F. N. Footman, architect, 13 Exchange St., Boston, Mass., to be seen at his office and at the office of M. S. Jackson, Chairman, Newport, N. H.

The right is reserved to reject any or all bids.

506 F. A. RAWSON, Clerk of Committee.

SEWER. [At Cleveland, O.]

CITY CIVIL ENGINEER'S OFFICE,
CLEVELAND, O., August 13, 1885.

Sealed proposals will be received at the office of the Board of Improvements **until 12 o'clock, M., September 10, 1885**, for the construction of a sewer in Scranton Ave., between Willey St. and Holmden Ave.

Plans and specifications may be seen and blank proposals can be obtained at the office of the City Civil Engineer after September 7, 1885.

Each proposal must contain the full name of the party or parties making the same, and all parties interested therein, and must be accompanied by a bond of $500, with good and sufficient surety that, if the same is accepted, a contract will be entered into.

No proposals will be entertained unless made on the blanks furnished by the engineer.

The city reserves the right to reject any or all bids.

By order of the Board.

C. G. FORCE,
506 City Civil Engineer.

WANTED.

SITUATION. — Young man, aged 18, desires to become student in architect's office, New York or Brooklyn, graduate of Brooklyn High School and familiar with instruments. Address J. L. Edwards, Box 3393, N. Y. P. O. 506

PROPOSALS.

STONE AND BRICK WORK. [At Minneapolis, Minn.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., September 1, 1885.

Sealed proposals will be received at this office **until 2 P. M., on the 29th day of September, 1885**, for all the stone and brick work required for the basement and area walls of the post-office, etc., building at Minneapolis, Minn., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check for $1,000 for stone-work, and $500 for brick work.

M. E. BELL,
506 Supervising Architect.

BRIDGE. [At Salem, N. J.]

Sealed proposals will be received by the undersigned at Salem, N. J., **up to 11 o'clock, A.M., of Wednesday, September 9, 1885**, for the construction of an iron highway bridge over Alloway's Creek at Hancock's.

Proposals to contain complete drawings of the structure, and full description of same with strain sheets.

The Board of Chosen Freeholders reserves the right to reject any or all bids. Specifications can be had by addressing the undersigned.

D. HARRIS SMITH,
Clerk Board Chosen Freeholders, Salem, N. J.
506

JAIL. [At Montgomery, Ala.]

OFFICE OF THE BOARD OF REVENUE,
OF MONTGOMERY COUNTY,
MONTGOMERY, ALA., July 28, 1885.

Sealed proposals will be received by the Board of Revenue of Montgomery County, Ala., **until 12 M., Monday, September 7th, 1885**, for the erection and completion of a new brick jail building, containing twenty-four steel cells in the City of Montgomery, Ala.

Bids will be received for the entire work, or separately for the iron and steel part, and for the different parts of the building.

The drawings and specifications can be seen at the office of the Board of Revenue, Montgomery, Ala., and also at the office of Bruce & Morgan, Architects, Atlanta, Ga. The Board of Revenue reserves the right to reject any or all bids. W. H. HUBBARD,
506 Clerk.

ALTERATIONS. [At Oxford, O.]

Sealed proposals will be received by the Board of Trustees of the Miami University, **up to noon of the 17th day of September, 1885**, at the Secretary's office, University Building, in the village of Oxford, O., for material and labor required in the alteration and repairs of the Miami University Buildings, in accordance with plans and specifications by D. W. Gibbs & Co., Architects, now on file in the office of the Secretary.

Also, at same time and place, bids will be received by said Board of Trustees for the heating and ventilating of said University buildings, parties bidding to furnish complete plans showing system contemplated.

Each bid must be accompanied by a good and sufficient bond in the sum of $1,000, conditional that if awarded the work he or they will enter into contract and give bond for the faithful performance of the same.

The Board reserve the right to reject any or all bids.

By order of the Board of Trustees.

506 F. W. BISHOP, Secretary.

ARMY BUILDING. [At San Antonio, Tex.]

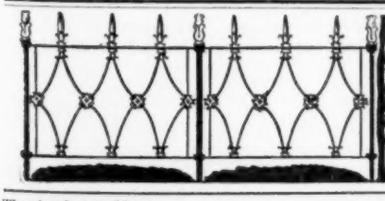
HEADQUARTERS DEPARTMENT OF TEXAS,
OFFICE OF CHIEF QUARTERMASTER,
SAN ANTONIO, TEX., August 10, 1885.

Sealed proposals in triplicate, subject to usual conditions, will be received at this office **until 12 o'clock, noon, on the 10th day of September, 1885**, at which time and place they will be opened in presence of attending bidders, for the construction, at San Antonio, Tex., of eighteen buildings, according to plans and specifications on file in this office, which will be furnished on application, together with blank proposals and circulars giving full instructions as to manner of bidding and terms of contract.

The Government reserves the right to reject any or all proposals.

Envelopes containing proposals should be marked "Proposals for Construction at San Antonio, Tex." and addressed to the undersigned.

J. G. C. LEE,
506 Major and Chief Quartermaster.



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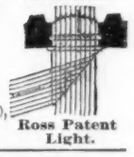

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Great Improvement in Wash-Tubs.

Solid White Crockery Wash-tubs, manufactured under Morahan's patent. The only ones ever made in the world. Do not buy imitations until you see the genuine. Morahan's Patent stamped on every tub. Washboard and soap-cup moulded in every set.

Will outlast any house. Call and see them or send for price-list.

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City Surveyors and Civil Engineers,

120 and 697 BROADWAY,
(P. O. Address, Lock Box 110, Equitable Building.)
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Specialty: City Surveying and Building Construction.

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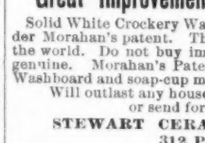

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Hand-made Red Front Pressed Bricks,

Carrying One Million in Stock.

Samples on application to the office,

140 54th St., Philadelphia.

PROPOSALS.

SEWER-PIPE. [At Cincinnati, O.]

CINCINNATI, August 25, 1885.

Sealed proposals will be received at the office of the undersigned, Room 23, Sinton Building, Fifth and Vine Sts., Cincinnati, O., **until 12 o'clock, M., of Tuesday, September 22, 1885**, for furnishing and delivering at Avondale, Hamilton Co., O., about

1,900 feet of 10-inch sewer-pipe.
1,900 feet of 24-inch sewer-pipe.
400 feet of 21-inch iron-pipe.

According to plans on file with the Clerk of the Board of Sewerage Commissioners. The Council reserves the right to reject any or all bids.

Bidder to indorse their names and address upon the outside of the envelopes containing their bids.

Each bid to be accompanied by two disinterested sureties.

Bidders to use the blank forms, as none others will be received.

Plans and specifications and forms of proposals can be obtained at the office of the undersigned, or at the office of Anderson & Hobby, 68 and 69 Johnston Building, Cincinnati, O.

By order of the Board of Sewerage Commissioners.

508 W. ELLWOOD WYNNE, Clerk.

PEET VALVE CO.,

Manufacturers of

DOUBLE GATE-VALVES

—FOR—

STEAM, WATER, GAS, Etc.

163 Albany St., Boston.

American Fire Insurance Co., Phila.

CASH CAPITAL	400.000.00
Reserve and Liabilities	852,970.05
Surplus	551,548.96
Total Assets Jan. 1, 1884.	1,804,519.21

J.B.&J.M.CORNELL,

MANUFACTURERS OF

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COLUMNS, LINTELS, AND

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DEALERS IN

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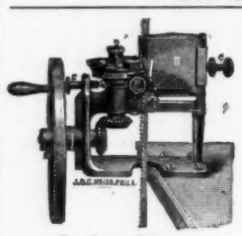
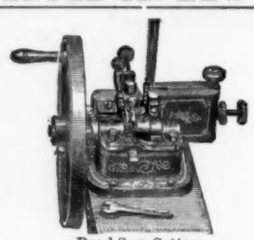
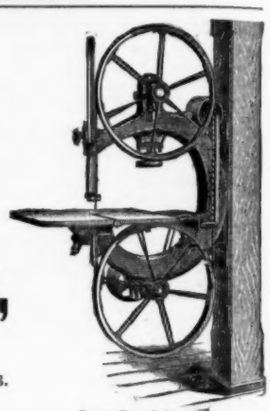


Band-Saw Filer.



Band-Saw Setter.



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Send for Catalogue.

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Philadelphia, Pa.

NEW YORK WAREROOMS, 115 LIBERTY ST., NEW YORK.

PROPOSALS.

PAINT, LEAD, OIL, ETC.

[At Brooklyn, N. Y.]

NAVY PAY OFFICE, 27 STATE ST., NEW YORK, August 20, 1885.

Proposals, in duplicate, sealed and indorsed on envelope "Bids for Supplies," will be received at this office **until 12 o'clock**, M., **September 17, 1885**, for the following supplies, of best quality, to be delivered within twenty days from date of award in the Brooklyn Navy Yard, free of expense to the Government, and subject to the usual conditions and inspection.

BUREAU OF YARDS AND DOCKS.

1,730 gallons of asphaltum paint, or paint equal thereto.

White lead, zinc, oil, glass, etc., as per schedules, which can be seen at this office or at the Navy Yard.

The right is reserved to reject any or all bids, and bids only from manufacturers of or regular dealers in the articles required will be considered.

Blank forms for proposals will be furnished at this office.

Two responsible sureties are required for the prompt and faithful delivery of the articles awarded, and the competency of the guarantors certified to before a notary or other public officer.

A. H. GILMAN,
506 Pay Director, United States Navy.

DECORATIONS.

[At Lansing, Mich.]

LANSING, MICH., August 3, 1885.

Notice is hereby given that under the provisions of Act No. 140 of the session laws of 1885, designs and proposals for decorating the walls and corridors of the capitol at Lansing are solicited, and will be received by the secretary at the office of the Board of State Auditors **until 9** A. M., **on Wednesday, September 30, next.** Bids may be made in the following manner, each to be accompanied by sketches or designs showing as clearly as may be the plan upon which the work is proposed to be finished:—

Bid No. 1 for Senate Chamber and House of Representatives.

Bid No. 2 for Supreme Court-room.

Bid No. 3 for rotunda and front corridor on first floor.

Bid No. 4 for Governor's reception room.

Bid No. 5 for all of above mentioned.

The whole amount to be expended on the work is limited to $23,000.

Each bid must be accompanied by a bond of the bidder or bidders to the people of the State of Michigan in the penal sum of one thousand dollars, to be approved by any member of the commission conditioned that if any contract be awarded to him or them, he or they will, within a reasonable time to be designated by said board, enter into an agreement with said board, and furnish a bond to be approved by said board conditioned for the prompt and faithful performance of the contract so awarded.

Blank form of both bids and bonds to accompany them, and the act of Legislature authorizing the work will be furnished on application to the secretary.

The board reserves the right to reject any and all bids or design. R. A. ALGER, Chairman.

T. M. WILSON, Secretary. 508

Classified Advertisements.

[Advertisers can be indexed only under a single head free of charge.]

Annunciators. PAGE
Edwards & Co., New York iv
W. R. Ostrander & Co., New York ix
Western Electric Co., New York & Chicago viii

Architects' Materials.
Frost & Adams, Boston iii
Wadsworth, Howland & Co., Boston iii

Art Journals.
Decorator and Furnisher Co., New York 3
Montague Marks, New York xviii

Asbestos Felt.
The Asbestos Packing Co., Boston & New York xix

Asbestos Paint.
H. W. Johns M'f'g Co., New York xi

Asphalt. Henry R. Bradbury, New York x
New York Mastic Works i

Bell Founders.
H. McShane & Co., Baltimore iv

Blind-Awnings.
F. A. North & Co., Boston ix

Boiler-Covering.
Shields & Brown, Chicago vi

Books and Journals.
Wm. T. Comstock, New York viii
Ticknor & Co., Boston iii

Brass Goods.
Mannatt n Brass Co., New York i

Brass Work.
J. B. Shannon & Sons 3

Brick (Ornamental).
Anderson Pressed Brick Co., Chicago xviii
A. T. Chur, New York xviii
Excelsior Brick and Stone Co., Phila. xi
Hydraulic Press Brick Co., St. Louis xviii
Peerless Brick Co., Philadelphia xviii
Waldo Bros., Boston xviii

Building Paper.
C. S. Garrett & Son, Phila., Pa. 4
Scott Paper Co., Phila. xiv

Carpets. W. & J. Sloane, New York i

Cement.
James Brand, New York xviii
Bactjer & Meyerstein, New York xviii
Brooks, Shoobridge & Co., New York xviii
Howard Fleming, New York x
Gustav Grawitz, New York xviii
Johnson & Wilson, New York xx
Marcial & Co., New York iv

Cement (Continued).
Sinclair & Babson, New York, N. Y. xviii
Standard Cement Co., Hartford, Conn. xviii

Chair-Seating.
A. H. Andrews & Co., New York and Phila. ix
Harwood Chair Seat Co., Boston ix

Clocks for Public Buildings.
Seth Thomas Clock Co., Thomaston, Conn. iv

Conductors (Water).
Austin, Obdyke & Co., Philadelphia ii
Boston Spiral Tube Works, Boston ii
Solderless Standing-Seam Conductor Co., Allegheny, Pa. ii

Conservatories.
Arthur E. Rendle, New York i

Contracting.
Flynt Building & Construction Co., Palmer, Mass. i

Coppersmiths and Metal-Workers.
G. L. Swett & Co., Boston iv

Cornices (Galvanized-Iron).
Meaker & Bro., St. Louis, Mo. xv

Creosote Stains.
S. Cabot, Jr., Boston vi

Decorative Leather.
C. R. Yandell & Co., New York i

Decorators.
Cox Sons, Buckley & Co., New York ii
L. Haberstroh & Son, Boston iii
Donald McDonald, Boston ii
W. J. McPherson, Boston iii
Frank Hill Smith, Boston ii
William Wright, New York ii

Door-Hangers.
Cohoes Iron Foundry and Machine Co., Cohoes, N. Y. iv

Electric-Light Wiring.
Chas. J. Klein & Co., New York ix

Electrical-Work.
Detroit Electrical Works, Detroit, Mich. ix

Elevators, etc.
A. Brewer, Boston v
Crane, New York & Chicago i
L. S. Graves & Son, Rochester, N. Y. i
Moore & Wyman, Boston i
Morse, Williams & Co., Philadelphia iv
Otis Brothers & Co., New York i
Stokes & Parrish, Philadelphia i
M. B. Sweezey, Chicago, Ill. v

Elevators, etc. (Continued).
Whittier Machine Co., Boston i
Z. Wile, Boston v

Engines (Caloric Pumping).
Delamater Iron Works, New York x

Engines (Gas).
Schleicher, Schumm & Co., Philadelphia ix

Fencing. The Fred J. Myers M'f'g Co. xv

Fire-proof Building.
Fire-Proof Building Co., New York xix
Frank Lyons, Jr., New York xix
Henry Maurer, New York xix
Ottawa Tile Co., Chicago xix
Raritan Hollow and Porous Brick Co. xix
John J. Schillenger, New York xix
Wight Fire-Proofing Co., New York xix

Floors (Inlaid).
National Wood M'f'g. Co., New York xx
Wm. Hannam & Co., New York xx
W. E. Wheeler, Toledo, O. iv

Floors (Water-Tight).
W. L. Dolbeare, Boston 2

Fret-Work.
C. S. Ransom & Co., Cleveland, O. ix

Friction-Clutch.
A. & F. Brown, New York v

Furniture.
Keeler & Co., Boston x

Gas-Fixtures.
Archer & Pancoast M'f'g Co., New York x
Howland & Churchill, Boston xi
Mitchell, Vance & Co., New York i

Gas-Machines.
Denny Bros. & Co., New York ix
Pa. Globe Gas-Light Co., Phila. ix
Pittsburgh Supply Co., Pittsburgh, Pa. ix
Tirrill Gas-Machine Co., New York ix

Gas-Stoves.
Goodwin Gas-Stove Co., Phila. vii

Gas-Piping.
J. F. Dalton, Boston i

Glass Roofing.
Arthur E. Rendle, New York i

Glass (Stained and Ornamental).
James Baker & Son, New York ii
Wm. Coulter & Son, Cincinnati ii
Decorative Glass M'f'g Co., Chicago, Ill. ii
George Drake, Cleveland, O. ii
Otto F. Falck & Co., New York ii

Glass (Stained, etc.) (Continued).
Friederichs & Staffin, Detroit, Mich. ii
Alfred Godwin & Co., Phila. ii
R. S. Groves & Steil, Philadelphia ii
H. Edgar Hartwell, New York iii
John Matthews, New York iv
McCully & Miles, Chicago ii
W. J. McPherson, Boston ii
Donald MacDonald, Boston iii
Redding, Baird & Co., Boston ii
Samuel West, Boston ii

Grates, etc.
J. S. Conover & Co., New York xx
Henry Dibbiee, Chicago iii
Thos. Dixon & Sons, Phila. vii
Eureka Grate Works, Cincinnati, O iv
W. H. Harrison & Bro., Philadelphia viii
W. Jackson & Son, New York viii
Edwin A. Jackson & Bro., New York x
Wm. H. Jackson, New York xx

Gutter. D. Newton, Newport, R. I. xviii

Hardware.
Burditt & Williams, Boston iv
Nashua Lock Co., Nashua, N. H. 3
A. G. Newman, New York 3

Harness Bracket.
Jas. J. Read, Boston 4

Heating-Apparatus.
Bartlett, Hayward & Co., Baltimore 1
B. C. Bibb & Son, Baltimore, Md. vii
Boynton Furnace Co., New York xiii
J. Reynolds & Son, Phila. vi

Heating-Apparatus (Steam).
Bates & Johnson, New York vii
John Davis & Co., Chicago, Ill. vii
"Florida" Boiler Works, Geneva, N. Y. viii
Gorton Boiler M'f'g Co., New York vi
A. A. Griffing Iron Co., Jersey City xx
Le Bosquet Bros., Boston viii
Newell Universal Mill Co., New York vii
N. Y. Central Iron Works, Geneva, N. Y. vii
New York Steam Co., New York viii
H. B. Smith Co., New York viii
St. Louis Heating and Ventilating Co., St. Louis, Mo. viii
Wilson Boiler Co., Westfield, N. Y. vi
James P. Wood & Co., Philadelphia 1

Heliotype Process.
Heliotype Printing Company, Boston iii

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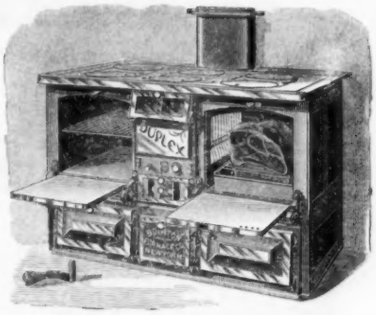
40 Years in this line of Business.

Over 50,000 "Boynton" Furnaces now in use.



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As a priming coat 40 pounds of "Ulesote" is equal to 100 pounds of White Lead.

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Acts as a thorough preservative, and therefore particularly adapted for all structural painting.

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MADE IN MANY DESIRABLE COLORS,

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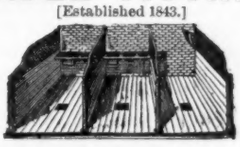
THE LARGEST MANUFACTURERS IN THE UNITED STATES
— OF —

STABLE FITTINGS.

[Established 1843.]



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Improved Mangers, Gutters, Screens, Clock Feeders, Stable Trimmings and Novelties are the result of ten years' experience and the making of the best fittings. **53 Elm St., Boston. Illustrated Catalogue free.**

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Water-Proofing for Brick, Stone, Terra-Cotta, Stucco, etc.

ALSO FOR INTERIOR WALLS.

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Classified Advertisements (Continued).

PAGE

Hinges. M. W. Robinson, New York....xvi
Hinges (Spring).
Van Wagoner & Williams Co., New York....xx
Horse-Stalls.
Frank O. Worthley, Boston....xiii
Insurance.
American Fire Ins. Co....xii
Continental Insurance Co., New York....xx
Insurance Co. of North America, Phila....x
Iron-Work (Architectural).
Bartlett, Hayward & Co., Baltimore....i
J. E. Bolles & Co., Detroit, Mich....xx
Boston Bridge Works....iv
Carnegie Bros. & Co., Pittsburgh, Pa....xv
Cheney & Hewlett, New York....xv
Composite Iron Works, New York....xi
E. C. Cooper & Co., Philadelphia....xv
Cooper, Hewitt & Co., New York....xx
Samuel Creswell, Philadelphia....xv
J. B. & J. M. Cornell, New York....xii
J. G. & T. Dimond, New York....xv
C. F. Hollingshead, Camden, N. J....xvi
Manly & Cooper M'f'g Co., Phila....xv
McHose & Lyon, Dayton, O....xv
Mesker & Bro., St. Louis, Mo....xvi
A. Northrop & Co., Pittsburgh, Pa....xv
Passaic Rolling Mill Co., Paterson, N. J....xv
Pennsylvania Construction Co, Pittsburgh, Pa....xvi
Phœnix Iron Co., Philadelphia....xv
Poulson & Eger, New York....xv
Union Foundry and Pullman Car Wheel Works, Chicago, Ill....xv
J. P. Walton, Cincinnati, O....iv
Kilns. W. D. Thompson, New York....ii
Locks.
Butler & Constant, New York....4
Yale & Towne M'f'g Co., Stamford, Conn....xx
Machinery.
Goodell & Waters, Philadelphia....xii
Machinery (Laundry).
Troy Laundry Machinery Co., Troy....v
Mantels.
The Butler Co., Chicago, Ill....ix
Joseph S. Miller & Bro., Philadelphia....vii
A. A. Riley, Chicago, Ill....viii
Marble Mosaics.
J. Pasquali & C. Aeschlimann, New York....iii
Marble-Workers.
A. L. Fauchere & Co., New York....ii
Robert C. Fisher, New York....i
Metal-Work (Art).
Joseph Neumann, Philadelphia....xvi
Metal-Workers.
J. & R. Lamb, New York....ii
Mineral Wool.
U. S. Mineral Wool Co., New York....iv
Mortar Colors.
American Soapstone Finish Co., Nashua, N. H....iv
Samuel H. French & Co., Philadelphia....iv
Mortar Black.
Henry D. Dupee, Boston....xviii
Oils. Robert Colgate & Co., New York....3
Paint.
Liquid Glass Paint Co., Hartford, Conn....iii
H. F. Taintor, New York....xiii
Pens.
The Esterbrook Steel Pen Co., New York....iv
Photographs.
Soule Photograph Co., Boston....iii
J. W. Taylor, Chicago, Ill....i
Photo-Gravure.
Photo-Gravure Co., New York....xi
Pipe-Covering.
The Chalmers-Spence Co., New York....vii
Portland Cement.
E. Thiele, New York....3
Pumps (Steam).
Geo. F. Blake M'f'g Co, Boston and New York....xvi
H. R. Worthington, New York and Boston..v
Reflectors.
I. P. Frink, New York....ix
Registers.
Tuttle & Bailey Man'f'g Co., New York and Boston....2
Rolling-Shutter.
J. G. Wilson, New York....x
Roofing Materials.
Angio-American Roofing Co., New York....x
Cincinnati Corrugating Co., Cincinnati, O.xiv
W. Ehret Roofing Co., Philadelphia, Pa....x
Eureka Slate Co., Poultney, Vt....xiv
N. & G. Taylor Co., Phila....xiv
N. E. Felt Roofing Co., Boston....xiv
Rope.
John Farquhar's Sons....x
Kniesly & Miller, Chicago, Ill....xiv
Rugs.
T. O. Hague, New York....4
Sanitary Supplies.
Myers Sanitary Depot, New York....xx
Wm. Powell, Cincinnati....xvi
Sanitas Manufacturing Co., Boston....xvii
Joseph Zane & Co., Boston, Mass....xvi
Sash-Chains.
Thomas Morton, New York....2
Smith & Egge M'f'g Co., Bridgeport, Conn....xx
Sash-Cord.
J. F. Toiman & Co., Boston....x
Sash-Locks.
Chandler & Farquhar, Boston....xvi
Scenery (Theatrical).
Lafayette W. Seavey, New York....xx
Schools (Architectural).
Columbia College, New York....vi
Cornell University, Ithaca, N. Y....vi
Harvard University, Cambridge, Mass....vi
Institute of Technology, Boston....vi
Screens.
American Screen Co., Brookline, Mass....ix
Sewer-Gas Trap.
E. P. Bower & Co., Cleveland....xvii
Shingle-Stains.
S. Cabot, Jr., Boston....v
Shutters.
Clark, Bunnett & Co., New York....xx
Skylights, etc.
Bickelhoupt Bros., New York....viii
G. Hayes, New York....viii
Arthur E. Rendle, New York....i
John Seton, Brooklyn....viii
G. L. Swett & Co., Boston....iv
E. Van Noorden, Boston....viii
Slate.
American Bangor Slate Co., Bangor, Pa....xiv
T. F. & J. A. Hayden, St. Louis, Mo....xiv
Story & Wilbur, Boston....xiv
Monson Slate Agency, Lowell, Mass....xiv
Sliding-Door Rail.
Geo. F. Taylor & Wood, New York....xvi
Snow-Guards.
M. Halliday, New York....xiv
John H. Hiller, Boston....x
Soapstone Finish.
American Soapstone Finish Co., Nashua, N. H....xiv
Stable Fittings.
Samuel S. Bent & Son, New York....xiii
Statuary (Bronze).
National Fine Art Foundry, New York....xv
Stone (Building).
Hallowell Granite Co., Bedford, Ind....xviii
M. H. St. John, New York....xviii
Malone & Co., Cleveland, O....xviii
Ohio Building Stone Co., Cleveland....i
G. P. Sherwood, New York....xviii
Terre Haute Stone Works Co., Terre Haute, Ind....xviii
Thomlinson & Reed, Chicago....xviii
Street-Lighting.
Globe Gas-Light Co., Boston....ix
Surveyors.
Maclay & Davies, New York....xi
Terra-Cotta.
Baltimore Terra-Cotta Co., Baltimore, Md...xix
Jas. H. Beggs & Co., Wilmington, Del....xix
Boston Terra-Cotta Co....xix
A. Hall Terra-Cotta Co., Perth Amboy....xix
Indianapolis Terra-Cotta Co., Ind'polis....xix
Terra-Cotta (*Continued*).
Northwestern Terra-Cotta Wks., Chicago...xix
H. A. Lewis, Boston....xix
Perth Amboy Terra-Cotta Co....xix
Tiles.
American Encaustic Tiling Co., New York....i
T. Aspinwall & Son, New York....i
Alfred Boote, New York....ii
J. K. Brigham, New York....iii
John Chadwick, New York....xi
Henry Dibblee, Chicago....iii
International Tile Co., New York....iii
J. G. & J. F. Low, Chelsea, Mass....iii
Miller & Coates, New York....i
Fernando Miranda, New York....i
O. D. Person, New York....xix
Sharpless & Watts, Philadelphia....ii
U. S. Encaustic Tile Co., Indianapolis....i
Valves and Packing.
Jenkins Brothers, New York....x
Peet Valve Co., Boston....xii
Vanes.
T. W. Jones, New York....v
Varnish.
Murphy & Co., New York....iv
Vault Lights.
Dauchy & Co., Chicago....xi
Venetian Blinds.
Venetian Blind Co., Burlington, Vt....3
Ventilation.
H. S. Dickinson, Jersey City, N. J....vii
Globe Ventilator Co., Troy, N. Y....viii
E. Van Noorden & Co., Boston, Mass....viii
Wall Paper.
C. H. George, New York....iii
Wash Tubs (Porcelain).
Stewart Ceramic Co., New York....xi
Water-Closets.
E. Aspinall, New York....xvi
Haines, Jones & Cadbury, Phila., Pa....xvii
Henry Huber & Co., New York....xvii
Thomas Maddock & Sons, New York....xvi
Water-proofing.
Brick & Stone Waterpr'f'g Co., New York..xiii
Window-Blind Worker.
A. H. Dodd, Hudson, N. Y....iii
Window-Blinds.
Morstatt & Klatzl, New York....4
Window Improvement.
Chicago Window Improvement Co., Chicago, Ill....4
Window-Stud.
C. R. Nelson, New York....iv
Wire Lathing, etc.
Clinton Wire Cloth Co., Clinton, Mass....v
Corrugated Wire Lathing Co., New York....xi
Wire and Iron Work.
National Wire & Iron Co., Detroit, Mich....iii

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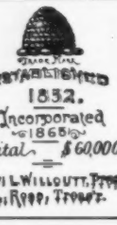

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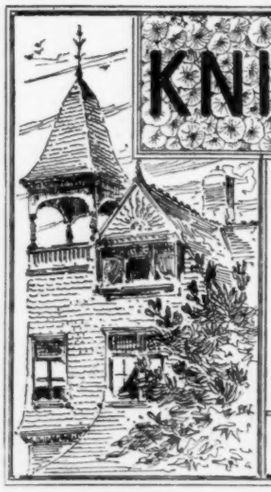

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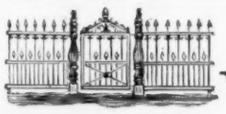

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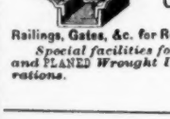

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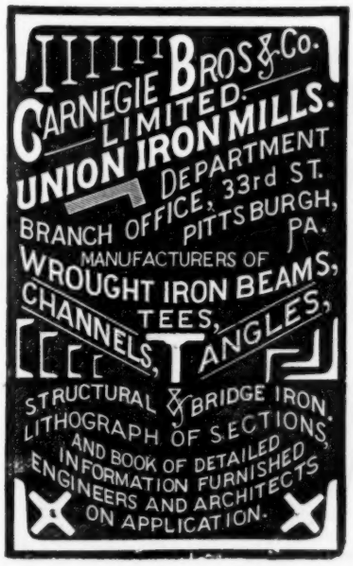

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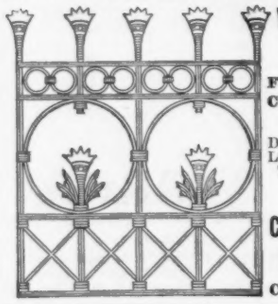
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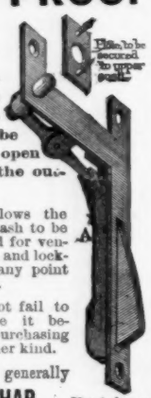

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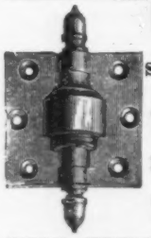
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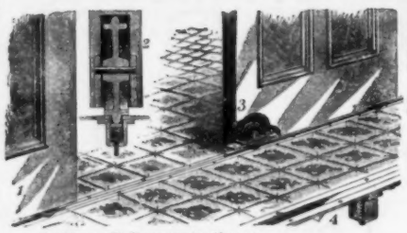

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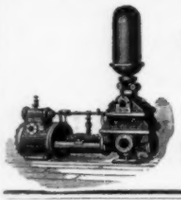
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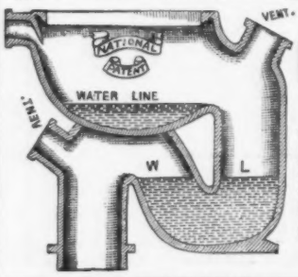

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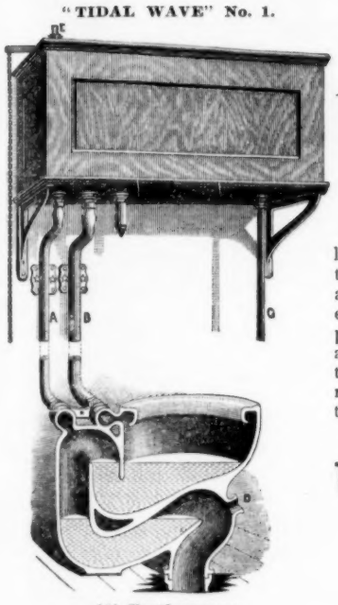

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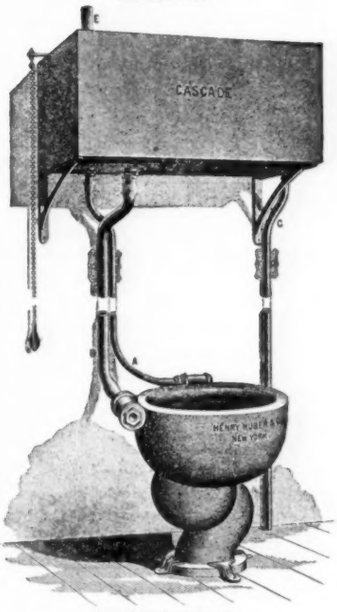

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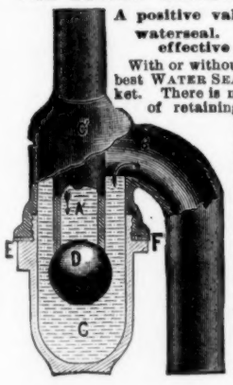

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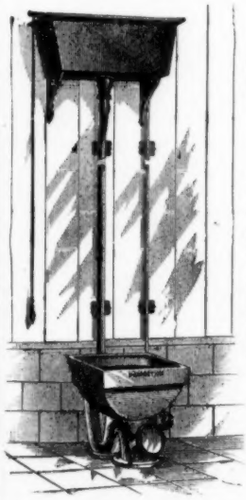

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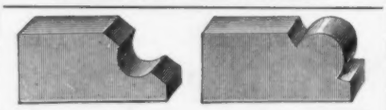

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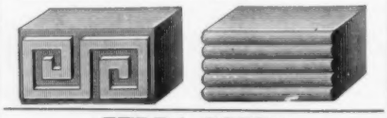

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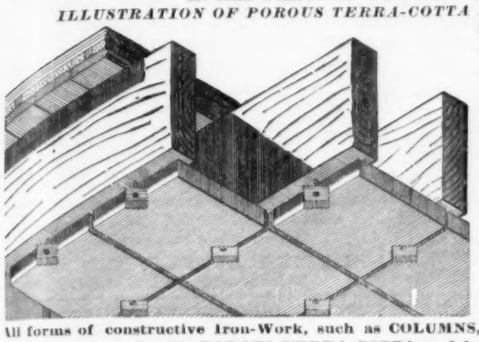

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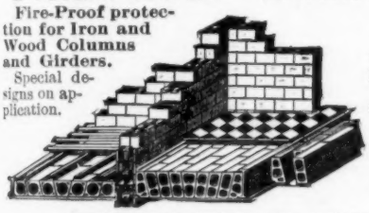

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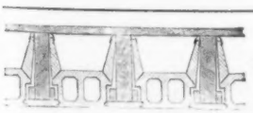

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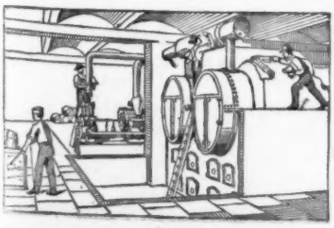

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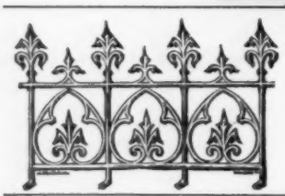

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The American Architect and Building News

ADVERTISERS' TRADE SUPPLEMENT.

No. 39. SATURDAY, SEPTEMBER 5, 1885. Volume XVIII. No. 506.

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The outside frame A, is made of cast-iron to wall in either brick or stone work.

On the outer side of frame A, is the guard B; made of either wrought or cast iron.

On the inner side of frame A, and on inside of wall opening in cellar, are two frames, one a fine screen D, the other a glass sash F.

Should you wish to have a warm cellar, all that is necessary is to close the screen-frame D, then close the glass sash F, and button it on inside of frame. That excludes all cold air, and keeps the cellar perfectly tight, while at the same time, light is admitted. If you want ventilation, turn the button and open the glass frame; that will give you a clear flow of air without opening the screen-frame; if more air is needed the screen-frame can be opened, thus giving all the ventilation necessary. If you wish to put coal, wood, etc., into the cellar, unlock the outside guard B, and swing outward; you then have free access to cellar. In closing, the same operation is performed; the outer guard is shut and locked, next the screen, and last the glass is buttoned on inside, making a good, strong guard and frames when operated as set forth.

The Byar Combination Cellar Window Guard.

The advantages of these guards over all others are as follows, namely:

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Third.— They always admit light. There are no old carpets, shavings, straw, leaves, etc., to darken the cellar in order that it may be kept warm, as is the case with other styles of guards; and suppose you want ventilation, you must take out the straw, leaves, etc., before you can get at the guard, and when you want your cellar closed must put these things all back again. With these New Guards all you must do is to turn a button, and you have all the ventilation you want.

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PLATE-GLASS.

About thirty miles south of St. Louis, on the main line of the St. Louis, Iron Mountain and Southern Railway, is Crystal City, the home of plate-glass manufacture in the West. The works of the Crystal Plate-Glass Company are located some distance from the station, but a small branch railway affords ready communication at all times. It is but a few years since it was the popular impression that plate-glass could not be produced in this country, and that idea is but partially obliterated at the present time, while the facts are that much of the finest and largest plate-glass now being used in the finest buildings in all our large cities is made in this country from native material, and is in every respect equal to that of foreign make. In the manufacture of glass of the very best quality, the Crystal Plate-Glass Company stands well in the advance. The two things which account for this fact are, first, the superior material — in other words, the Plattin sand, which takes its name from the stream of that name on the banks of which the sand rock quarries lie; and secondly, the experience and skill of those under whose management the work is prosecuted. The deposit of sand is unquestionably the most extraordinary and valuable that has ever been discovered in the world. Incalculable in its extent, this white sand is here found in a lofty bluff, into which tunnels have been driven for a distance of over fifty feet, and from which the invaluable material is obtained in absolute perfection ready for use. It is dazzlingly white and is perfectly translucent. The Company owns two hundred acres of this bluff, which averages seventy feet in thickness, and could not be exhausted in hundreds of years. The exceeding purity of the sand has excited the admiration of thousands. An analysis gives the following remarkable results: Silica, 99.62; iron, .09; magnesia, .07. Other indispensable materials required in plate-glass production are also found here in exhaustless quantity of the highest order of merit. It may be interesting to state that every ingredient that enters into any formula for the production of plate-glass is obtainable in this country, save soda ash, and that this can and will be made in St. Louis is but a question of time.

The immense works of the Company were commenced in 1872 by the American Plate-Glass Company, with a capital stock of $250,000. In 1874 this was raised to $500,000; in 1880 to $1,000,000; and in 1883 to $1,500,000. The president of the Company is Mr. E. A. Hitchcock, a position he has held from the formation. The manager is Mr. George F. Neale, a gentleman who has been connected with the manufacture of plate-glass in Europe and this country ever since his boyhood. Under such experienced management all imperfections have been removed, and the Company claims with just pride a production it is willing to submit to competition from any quarter.

The process of manufacture of plate-glass is very interesting, and it is only possible to fully appreciate it by witnessing the operation from the time the sand is taken from the quarries till the glass comes out of the polishing department in all its perfection. There are seven departments through which the glass

goes in the course of manufacture, as follows: 1. The pot-room, in which the crucibles and other fire-clay articles are prepared. 2. The mixing department, in which materials are mixed preparatory to being melted in pots. 3. The melting department, with a capacity for melting the contents of forty-eight pots daily, and a fourth gas-furnace containing twenty pots is in course of construction. 4. The casting process, which might be called the supreme moment, as in the face of the most intense heat this side of Hades: not a moment can be safely lost in the transfer of the great masses of fiery fluid from the pots to the casting tables. 5. The grinding department, where the glass is ground down to a dead level surface by being laid, imbedded in plaster, on a disc grinder 21 feet in diameter. 6. The smoothing department, where the surface is smoothed by an interesting process after it is ground. 7. The polishing department, where, by the use of large felt-covered rubbers, aided by a liquid rouge, made from copperas prepared by the Company, the glass is polished. These processes require a large amount of space: the grinding and polishing departments occupy buildings 120 by 742 feet, and 116 by 660 feet, besides which there are numerous other buildings, aggregating many hundred feet, in double line, containing (including the furnace and annealing halls) the grinding and polishing department, the pot-house, in which the crucibles and other fire-clay articles are prepared, the grinding and mixing house, two boiler-houses, pump-house, blacksmith shop, and a number of other necessary buildings, all of the most substantial and enduring character.

The machinery and engines consist of three melting furnaces (all gas), 70 annealing kilns, 22 circular grinders, 50 smoothers, 36 polishers, and 20 steam engines, together with complete outfits in the very best kinds of machinists' tools and machinery for doing the Company's own work, perfect equipments for their own blacksmiths, carpenters, brickmakers and masons, a milling department for grinding limestone, clay and plaster-of-Paris, and numerous minor but necessary buildings for the correct conduct of this mammoth enterprise.

The city contains upwards of one hundred and fifty frame houses for the use of the operatives and their families, numbering nearly one thousand men, women and children. The situation is a most charming one for residence as well as valuable for manufacturing purposes, and the buildings in all their strength, powerful machinery, the peaceful village with all its refining influences, the raw material in its exceeding wealth and purity, and the manufactured article in all the pride of honest construction, combine to produce a marvellously beautiful picture upon the eyes and minds of all who may be so fortunate as to visit this romantically realistic city. The Company has made special provisions for the comfort, health, instruction and amusement of its operatives. A fine large hall has been erected. Religious services are held every Sabbath. No drinking is permitted on the Company's premises.

Among the buildings that have been supplied with plate-glass from Crystal City are the Iowa State-House, Des Moines; the Shillito Buildings, Cincinnati; Barr Building, St. Louis; Sloane and Clarke Buildings, New York, as well as the Metropolitan Museum of Art in Central Park; the Custom Houses of Chicago, St. Louis, Little Rock, Ark., San Francisco, and Topeka, Kan.; the Tabor Opera-House and Hotel, Denver, Col.; the Syndicate, and other large buildings, Minneapolis, Minn.; Southern Hotel, St. Louis, and a number of the largest and most prominent edifices in Boston, New York, Philadelphia, Chicago, Cincinnati, New Orleans, Cleveland, Nashville, Omaha, Des Moines, and other large cities throughout the country.

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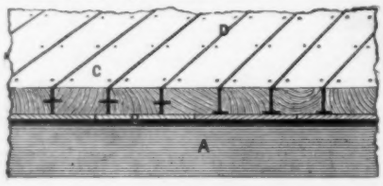

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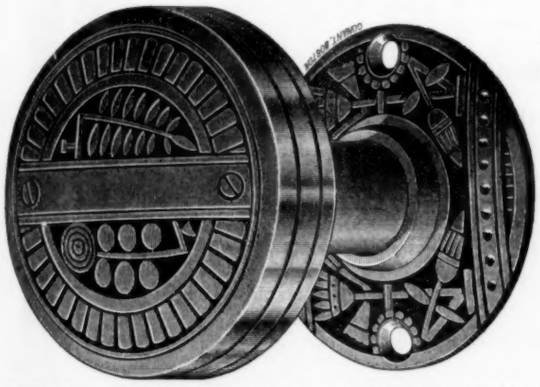

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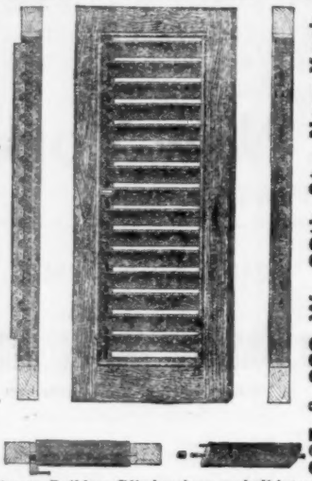

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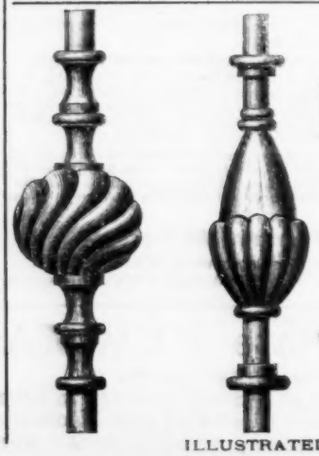

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